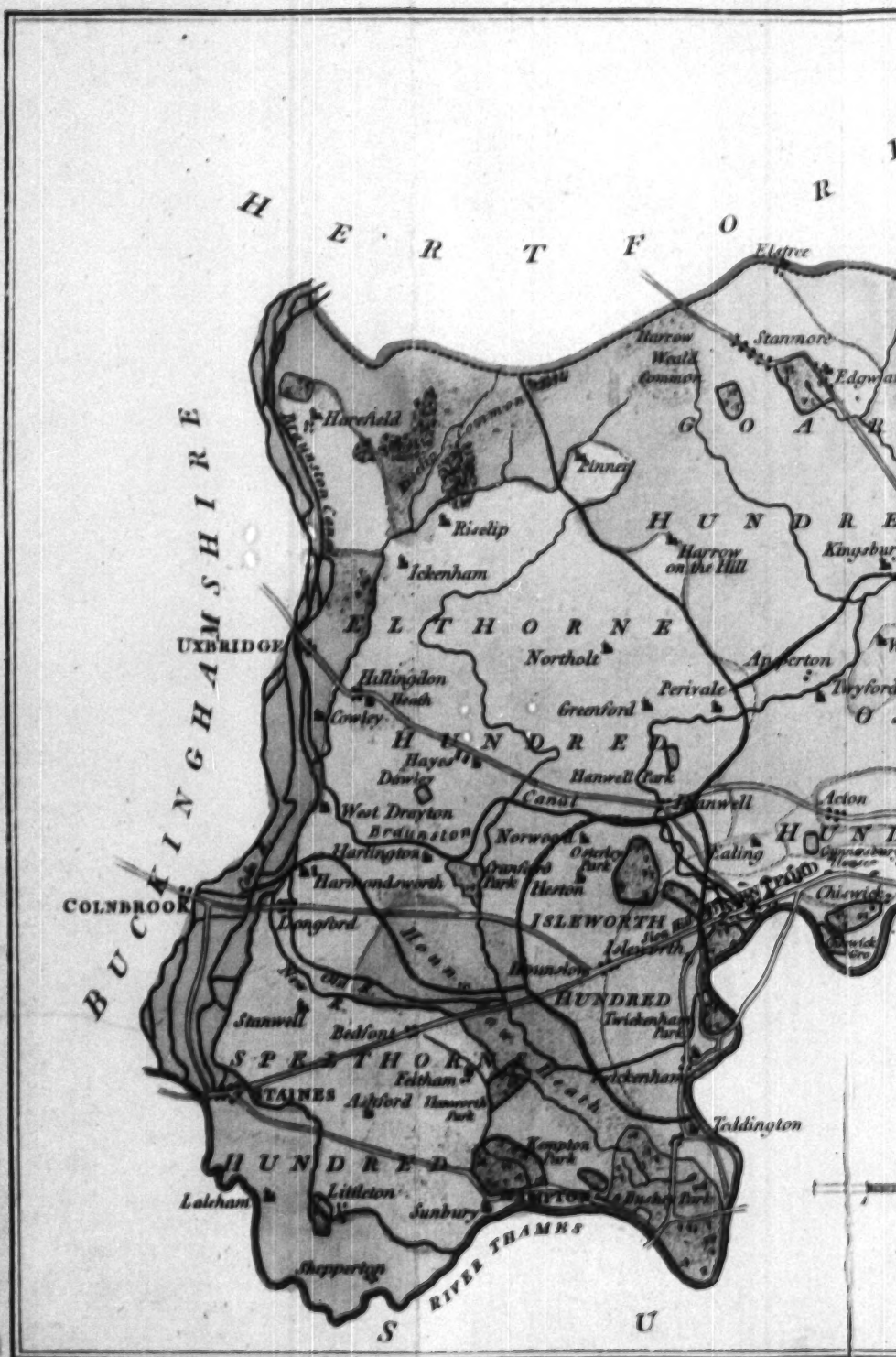
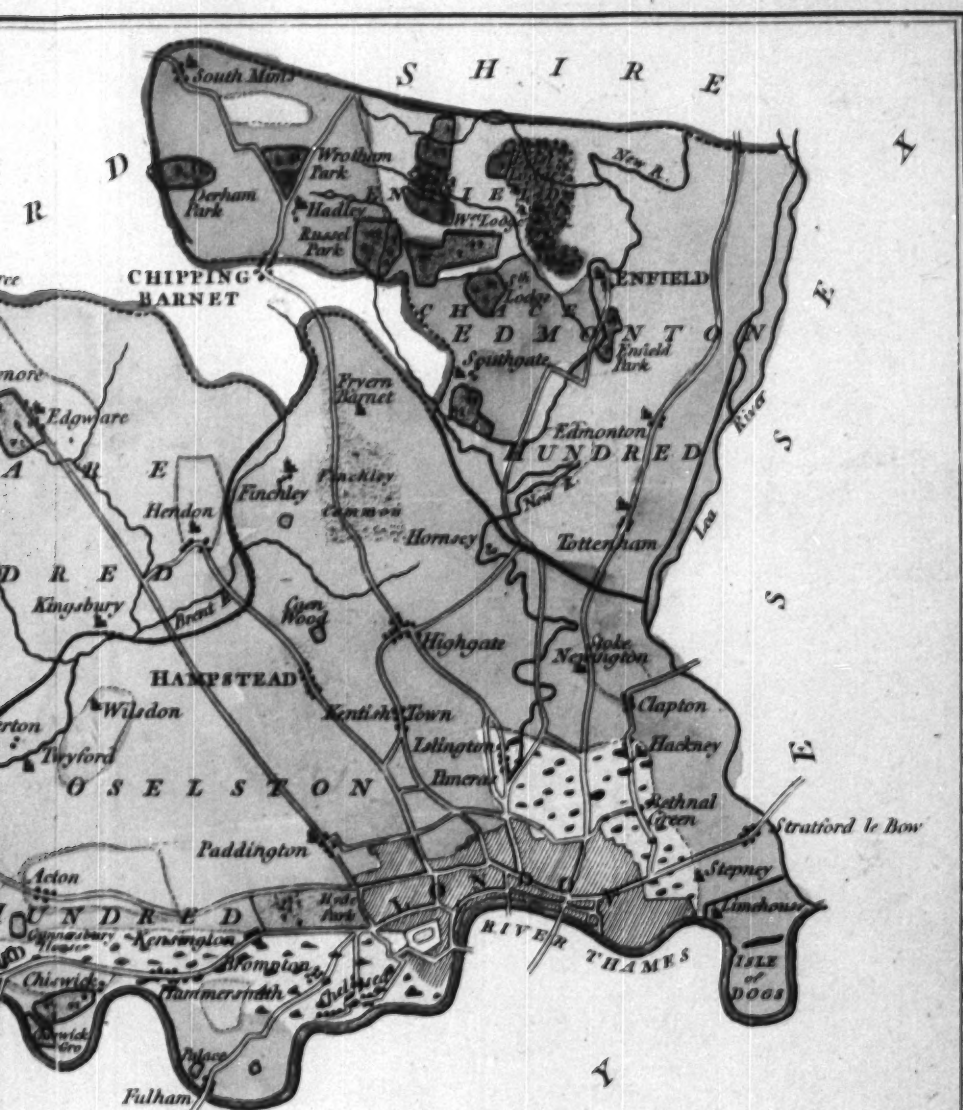


V I E W
OF THE
A G R I C U L T U R E
OF
M I D D L E S E X.

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MIDDLESEX

EXPLANATION

Brown Arable
 Green Principally Meadow & Pasture
 Yellow & Green. Nursery Grounds & Gardens

Scale of Miles



R

V. I E W *179d.*
OF THE
A G R I C U L T U R E
OF
M I D D L E S E X ;
WITH
OBSERVATIONS ON THE MEANS OF ITS IMPROVEMENT,
AND
SEVERAL ESSAYS ON AGRICULTURE IN GENERAL.

DRAWN UP FOR THE CONSIDERATION OF
THE BOARD OF AGRICULTURE, *K. Académie*

BY
JOHN MIDDLETON, ESQ.
OF WEST-BARNS FARM, MERTON, AND OF LAMBETH, SURREY,
LAND SURVEYOR;
Member of the London Society for the Encouragement of Arts, Manufactures,
and Commerce, and Corresponding Member of the Board of Agriculture.

ACCOMPANIED BY THE
REMARKS OF SEVERAL RESPECTABLE
GENTLEMEN AND FARMERS.

L O N D O N :

PRINTED BY B. MACMILLAN,
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AND THE BOARD OF AGRICULTURE; AND SOLD BY
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J. SEWELL, CORNHILL; CADELL AND DAVIES,
STRAND; W. CREECH, EDINBURGH; AND
JOHN ARCHER, DUBLIN.

1798. *15*

For Banks

ADVERTISEMENT.

THE great desire that has been very generally expressed for having the AGRICULTURAL SURVEYS of the KINGDOM reprinted, with the additional communications which have been received since the ORIGINAL REPORTS were circulated, has induced the BOARD OF AGRICULTURE to come to a resolution of reprinting such as may appear on the whole fit for publication. It is proper at the same time to add, that the Board does not consider itself responsible for any fact or observation contained in the Reports thus reprinted, as it is impossible to consider them yet in a perfect state; and that it will thankfully acknowledge any additional information which may still be communicated: An invitation, of which, it is hoped, many will avail themselves, as there is no circumstance from which any one can derive more real satisfaction, than that of contributing, by every possible means, to promote the improvement of his Country.

N. B. *Letters to the Board may be addressed to Lord SOMERVILLE, the President, No. 32, Sackville-street, Piccadilly, London.*

INTRODUCTION.

IT cannot fail to excite a considerable degree of astonishment, that the noble and useful science of Agriculture, to which we owe not only many of the comforts and conveniences of life, but even the means of existence, should so long have remained neglected, and almost despised; while every other art and science, from the liberal encouragement and support they have received, seem to have gone on in a steady and rapid step towards perfection*. But the period of indifference and neglect is passed, and the time seems at length to have arrived, in which we shall no longer have occasion to lament the slow progress that has hitherto been made in this invaluable branch of science. Happily for the country in general, and for the agricultural part of the community in particular, such a spirit for the improvement and advancement of husbandry has

* "The land constitutes by far the greatest, the most important, and the most durable, part of the wealth of every extensive country. The poor cannot be so much distressed by any rise in the price of poultry, fish, wild fowl, or venison, as they must be relieved by the fall of potatoes."—*Smith's Wealth of Nations*.

gone forth into the world, and diffused itself among all ranks of society, as will, undoubtedly, under the auspices and assistance of the honourable Board of Agriculture, and by the interesting communications of its many intelligent correspondents, effect the most beneficial improvements in the Agriculture of the country. The many barren and uncultivated wastes, which have so long remained a mark of disgrace to the spirit and character of Britain, will, probably, be cultivated, and thereby changed into a permanent resource of wealth and prosperity to the nation, and an extraordinary degree of emulation and competition among the more enlightened class of husbandmen will be excited, whose example will no doubt speedily be followed by every farmer of common sense.

When we reflect on the extraordinary, and almost inconceivable exertions that have lately been made, even by *individuals*, towards the general improvement of Agriculture, but more particularly in the important article of live stock, in some of the midland counties; what advantages may we not promise to ourselves from the *united* efforts of almost all the agricultural abilities of the kingdom, employed in collecting, and afterwards in digesting into a regular system, all the information that can possibly be procured from every corner of the island, of the most improved manage-

management of every sort of soil and cattle; of the best implements now in use for every branch of husbandry; and, in short, of every thing that can at all be either interesting or useful on this important subject. It is indeed impossible to appreciate the benefits of such a measure; they are, whether considered in a national or individual point of view, really incalculable!

It will readily be admitted, on a moment's reflection, that the more highly any country is cultivated, and the nearer it approaches to perfection in its rural concerns, the greater will be its increase of population, and of course, its strength and consequence in the scale of nations. This consideration points out to the *government* of this country, the sound policy, and true wisdom, of giving all possible encouragement and assistance to a spirit of industry and exertion, among the best part of its population, the healthy sons of agriculture,

For the same reason it follows, that the individual who makes even the smallest effort towards the furtherance of this great national object, renders essential service to his country, and may therefore justly lay claim to the candid attention of his fellow-citizens, though he may perhaps (as in the present instance) be but a weak advocate in a noble cause. Under this impression it

was, that I undertook the task of writing the following Report on the Agriculture of the County of Middlesex, fully sensible of the many disadvantages I laboured under, as well from the necessary attention to other indispensable avocations, as from my inability to do complete justice to the subject. The work, such as it is, I commit to that candour and indulgence with which the public always receives every well-meant endeavour to advance national improvement. Should I be so happy as to have it thought that I had, in the smallest degree, attained the object I had in view; that I had furnished any useful information to the agricultural world, or that I had, in the least, contributed to promote the laudable designs of the honourable Board of Agriculture, I shall consider myself as most amply repaid for the care and attention I have bestowed on the subject.

JOHN MIDDLETON.

Lambeth, Surrey.

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† The Author intended to have inserted a plan of an orchard in this place; but as it turned out to be inconvenient in point of size, and being of small importance, the idea was given up.

ERRATA.

- Page 3, line 8, for " (No. 1)" read " (No. 19)."
- 17, line 1, " even supposing it possible," should be within a parenthesis.
- 18, line 1, for " the," read " some."
- 41, lines 11 and 12, for " principally," read " partly."
- 42, 76 and 95, for Threshing, read Thrashing.
- 51, line 10 from the bottom, for " the most part," read " sometimes."
- 147, line 14, after " by," add, " a trench plough, or by."
- 161, line 1, dele the comma after cole.
line 18, dele " the owner."
- 190, line 14, for " black dolphin," read " collier."
- 235, line 4, after " it is," add " supposed to be."
- 245, line 4, for " the Appendix," read " vol. xiv. Transactions of Society of Arts, &c."
- 334, line 7, for " hay, 1 truss, at 4-10ths per ditto," read, " hay, 1 truss and 4-10ths at 1s. 9d."
- 349, line 2, after " of," add " driving to and from."
- 389, line 3, in the first note, after " each," add " person."
- 391, line 3 from the bottom, dele " other."
- 392, line 4, dele " other."
- 436, line 3, for " ltivated," read, " cultivated."
- 445, line 9 from the bottom, for " 5,273," read, " 5,273²⁷³/₁₀₀₀."
- 453, line 21, for " Middlesex 648,000," read, " Middlesex 650,000."

AGRICULTURAL SURVEY

OF

MIDDLESEX.

CHAPTER I.

GEOGRAPHICAL STATE AND CIRCUMSTANCES.

SECTION I.—SITUATION AND EXTENT.

MIDDLESEX is an inland county, situated towards the south-east part of the island. It is bounded on the south by Surrey, from which county it is divided by an imaginary line drawn down the middle of the river Thames; on the east by Essex, from which county it is divided by a similar line drawn along the middle of the river Lea; on the west by Buckinghamshire, from which county it is divided by a supposed line drawn down the middle of the river Coln; and on the north by Hertfordshire, from which county it is divided by an irregular line of parish boundaries.

This county is of a very irregular shape; but if its figure was reduced to a regular parrallelogram, of equal superficies, the medium length and width would be about twenty miles by fourteen; and consequently, it contains

280 square miles, or 179,200 acres : every part of which, that is not occupied by buildings, roads, water, &c. is susceptible of cultivation*.

It received its name from having " been inhabited by
" a party of Saxons, who, being situated in the midst of
" the three petty kingdoms of the East, West, and South
" Saxons, called themselves, or were called by their
" neighbours and brethren, Middle Saxons, which, in
" common conversation, was soon abbreviated into Mid-
" dlesax, or Middlesex."—(*Magna Britannia.*)

It possesses some very superior advantages over every other county, in its comprizing the Capital of the British Empire, the seat of Government and of Legislation, of the Law, of Learning, and the Fine Arts; where all the families of the first rank and wealth occasionally reside, which is generally during the sitting of Parliament, and where the business of the richest merchants, bankers, and citizens, is carried on, to an extent that is unequalled in any other part of the globe†.

SECT. II.—DIVISIONS.

THIS county is, primarily, divided into six hundreds, named Ysulston, Edmonton, Goare, Elthorne, Isle-

* Mr. Foot's Survey says, " it is 23 miles by 14, and contains 240 square miles, or 217,600 acres;" which is totally wrong, as 23 by 14 would give 322 square miles instead of 240, which (240) is equivalent to only 153,600 acres. Even 322 square miles, only contain 206,080 acres; but, according to Faden's map, the extent of the county is as I have stated it in the text.—*J.M.*

† London (says Mr. Colquhoun, in his admirable Treatise on Police) is not only " the first commercial city that is known at present to exist, but is
" also one of the greatest and most extensive manufacturing towns, perhaps
" in the universe: combining in one spot every attribute that can occasion
" an assemblage of moving property, unparalleled in point of extent, magni-
" tude, and value, in the whole world."

worth,

worth, and Spelthorne; and into two liberties, called Finsbury and Wenlaxbarn. These are subdivided into 208 parishes, whereof 108 are within the City of London; 10 in the City and Liberties of Westminster.

These two cities, and 18 additional parishes (together 136) are within the bills of mortality; the rest of the county contains 62, all which are particularized in the Appendix, (No. 1.)

The City of London is governed by a Lord Mayor, two Sheriffs, 26 Aldermen, 202 Common Council-men, and a Recorder.

A freehold estate in this city does not entitle its owner to a vote at the county, or any other, election for members of Parliament.

The City of Westminster is governed by a High Steward, Deputy Steward, High Bailiff, Burgesses, &c. The Dean and Chapter of St. Peter's Cathedral choose the High Steward, who is commonly one of the nobility, and holds that office for life; he chooses his Deputy (who is always some eminent lawyer), and the High Bailiff; the Burgesses are chosen by the several wards.

This city hath properly but one parish, called St. Margaret's; but there are nine others, which are called the Liberties of Westminster, from their enjoying the freedom of that city, and also St. Martin's-le-grand, which, though circumscribed by the City of London, is part of the Liberty of Westminster, and votes accordingly for parliament men.

The Cities of London and Westminster, and about 50 adjacent parishes, form one town, the Capitol of Great Britain, known by the general name of London.

L O N D O N.

It may be expected, that in the Report of Middlesex, some account should be given of the state of the Capital. To enter much at length into so vast a subject, is beyond the bounds allotted for a work of this nature. It may therefore be sufficient to lay before the reader the following extract from a paper written by that respectable physician, Dr. George Fordyce, which describes the climate, and other circumstances connected with the general state of London, with great force and brevity.

“ London is situated in latitude $51^{\circ} 31'$ north, longitude $5^{\circ} 37'$ west from Greenwich, $5^{\circ} 16' 23''$ east of the opening into the Mediterranean from the ocean. The town is large, for an European town, being in a body about five miles in length, and three in breadth, besides a number of rows of houses lining each side of the roads going out from it. A mile is $1691\frac{6485}{10000}$ lengths of a pendulum swinging seconds. The greatest part of the town is situated on the north side of a river called the Thames. The ground on which this part stands, is an hill, which rises with a quick ascent from the bank of the river, and then gradually, although unequally, to the north-west, which is the most elevated part. The river on the south side is confined by an artificial bank, the ground on that side being flat; but the water does not stagnate in such of the ditches as are suffered to have the tide flow through them; wherever that is admitted, it scours them clean, and carries off much filth; but there are many ditches from which the tide is shut out, and they are always loaded with putrid matter.—“ On this side stands a considerable part of the town, called Southwark,” which, including the parish of Christ Church, and part of Lambeth and Newington,

is a body of near three miles by one. On the north side of the river, “ London reaches along the river side to the west, until the river leaves the bottom of the hill, and “ turns to the south. Above this, the river is confined “ between artificial banks on both sides, and is lined with “ houses till it runs through two old towns, Westminster “ and Lambeth.

“ London is surrounded, besides the houses which line “ the roads, with many large villages.

“ The river Thames runs through a valley, upon a “ bed of the gravel of flints, and probably clay under it, “ for many miles above and below London. The valley is “ bounded on both sides by hills not exceeding 400 feet “ in height. Where the river runs in the middle of the “ valley, it is secured by artificial banks on both sides, “ which have lasted longer than the memory of history, “ extending in all more than thirty miles. These banks, “ when the river washes the bottom of the hills on either “ side, are only continued on the opposite side. When “ not increased by either rains or the tide, the river is “ about a quarter of a mile broad, not more than twelve “ feet deep, and now and then, in very dry seasons, it “ has been forded by horses. The tide in this river flows “ above fifteen miles higher than London. At London, “ it rises at spring tides from twelve to fourteen feet. “ The water is very pure some miles above the town ; “ near the town it is mixed with mud, and contains a “ sufficient quantity of mucilaginous matter to putrefy.— “ When preserved in casks, it purifies itself by putrefac- “ tion, and remains afterwards more pure, but it never “ purifies sensibly in the river, nor in the cisterns in “ which it is sometimes kept for a few days for use. At “ the lower part of the town it contains a little sea salt, “ when the tide is at its height ; but this does not reach

“ to the middle of the town. Its specific gravity is the
 “ same with that of distilled water. The inhabitants are
 “ supplied with this water, which is pumped up by se-
 “ veral engines, principally worked by fire, into their
 “ houses.

“ The town is also supplied with water by an aque-
 “ duct, which is brought from” near twenty “ miles
 “ distance, from the north, through a canal of about 36
 “ miles in length. The water of this aqueduct is also
 “ pure, and, unless when heavy rains bring down” mud,
 “ it is bright and clear, and does not putrefy on keeping.
 “ Its specific gravity is also the same with distilled water.
 “ This water, as well as the other, is carried in wooden
 “ pipes under the streets into the houses of the inhabi-
 “ tants.

“ There are springs found on digging every where in
 “ the town, which might yield large quantities of water :
 “ these were formerly used, but are now little employed,
 “ because the supply from the Thames and New River
 “ is much cheaper. The waters of these springs contain
 “ a small portion of sea salt, and a larger quantity of
 “ magnesia vitriolata, so as to be sensible to the taste,
 “ and so as, in some places, to act as a purgative. They
 “ also contain gas ; sometimes in quantity sufficient to
 “ give them briskness, and render them agreeable to the
 “ taste.

“ Rain water is never used*, being always very im-
 “ pure, from the dust” which it washes from “ the tops
 “ of the houses.

“ The whole supply of water, from aqueducts and en-
 “ gines, is 109,440 cubic feet in an hour.

* Rain water is constantly used, both by the laundress and the house-
 maid.—J. M.

“ The valley through which the Thames runs, is gravelly, generally dry, and not marshy till about a mile below the town, the water in the river being confined between its banks.

“ The hills or risings, on which the principal part of the town stands, are mostly a mixture of clay and sand, the sand or gravel generally being in rather the largest proportion. In some places the soil is gravel.

“ The winds from the south-west to north-west, and from south-east to north-east, are the most prevalent*. The westerly winds blow over the great Atlantic Ocean, passing, before they reach London, over part of Great Britain for about two hundred miles, and over Ireland when they veer to the north. They

* This passage would correspond more with my own observations, if it stood thus: the winds from south-west to west, and from east to north-east, are the most usual; I think they prevail ten months in every year.

Winds blowing from every point of the compass between the west, north-west and north, are so very dry, as not to produce a day's rain in a year, though I have observed, as an uncommon circumstance, rain for an hour together from the north-west. An east wind is always dry; generally with black clouds, and the same from the other points, till the wind gets about to, or near, the north-east, which, with a few points on either side of the north-east, most frequently brings the like dry black cloudy, but sometimes hazy, weather, or a continuance of gentle rain.

When the wind veers from the north through the west, it continues dry till it passes the south-west, from which point to the south, it almost certainly brings rain; but it seldom stops there a day, but it returns to the same point; and when it passes southward through the eastern points, all is perfectly dry till it reaches about the south-east. The atmosphere then begins to give the appearance of rain.

The wind, however, seldom rests there, but veers to the south, and from that quarter, and a few points more westerly, we receive the greater rains.

During the spring months, the wind frequently blows warm and steadily from the south-west for near a fortnight; in a few hours it changes to the opposite point, or the north-east, and blows a steady cold gale for about another fortnight. This is repeated very often in the course of the year. The former winds induce people to leave off their winter clothing; the latter take them by surprize, thus thinly clothed, and is the cause that many diseases at that time prevail.—*J. M.*

“ are generally moist, although much drier than when
“ they arrive at the west coast of the island. The
“ barometer is generally low when they blow. They
“ are commonly most prevalent in February, September,
“ November and December. The easterly winds blow
“ over the large continent of Europe: they are always
“ dry. The barometer is high when they blow. They
“ are most prevalent in January, March, and the begin-
“ ing of April. They are cold, except sometimes when
“ they blow in July and August; while the westerly
“ winds are almost always warm, except in November,
“ if they verge to the north.

“ The heat of the air is very variable, seldom remain-
“ ing equal for many days; and every year differing en-
“ tirely from the preceding ones, not only in heat, but
“ also in moisture and rains. Sometimes the winter is
“ severely cold, with frost from November till May, with
“ little interruption. Sometimes the water is not frozen
“ for more than ten or twelve days. Most commonly,
“ there is a little frost in November and December, but
“ otherwise these months are usually very foggy and
“ moist. The principal frost generally is in January;
“ February is commonly a mild open moist month.
“ March is generally cold and dry. The summer months
“ vary as much; sometimes there are three months very
“ warm; sometimes not more than a week: the latter
“ half of July is commonly the hottest. In August heavy
“ rains often fall, especially in the last half of the month.
“ The thermometer sometimes rises to above 80° of Fah-
“ renheit's scale, very rarely to 86° , but the most com-
“ mon summer heat is from 65° to 75° ; it sometimes falls
“ in the winter to 15° ; it has been known to fall below
“ the point marked O, but very rarely.—The most com-
“ mon winter heat when it freezes, is between 20° and

“ 30° ;

“ 30; the most frequent when it does not freeze, between
“ 40° and 50°.

“ The air when dry is always loaded with, and often
“ obscured* by, dust, which consists of ashes and soot
“ arising from pit coal, the fuel which is commonly
“ burnt; horse-dung produced and ground to small powder, by the numerous carriages drawn by horses, with
“ which the streets are always crowded; powder of granite and flints, which form the streets and roads, and
“ are ground extremely fine by the wheels of the carriages.—These powders, with various others, penetrate
“ the houses every where, and undoubtedly enter the
“ trachea, adhere to the surface of the lungs, and not uncommonly produce cough, with difficulty of breathing,
“ in people first coming from the country.

“ The streets are generally wide, few of them so narrow as to prevent two carriages from passing, and many
“ of them wide enough to allow five or more to pass;
“ especially in new parts of the town, which form more than half of it, they are from sixty to twenty feet
“ wide; those of great communication seldom less than
“ thirty in the old part of the town; in the new part,
“ most of them are not less than forty.—In several places
“ there are squares of a considerable size, *i. e.* from about
“ 100 to 1000 feet square. The streets are well paved
“ and clean, notwithstanding the immense quantity of
“ horse-dung constantly falling upon them.

“ The houses, except most of those in the oldest part
“ of the town, which are not more than a quarter of the
“ whole, have a story sunk under the level of the street.
“ This contains the kitchen and other offices. Below the
“ level of the bottom of this story a covered canal is dug
“ under the street, with which there is a communication
“ from the houses, and by which putrescent matters sufficiently

“ ficiently fluid are carried off. Ashes, bones, &c. are
 “ conveyed away in carts twice a week. The greatest
 “ part of the houses are of a uniform structure; in each
 “ story a large room in front; a smaller room and the
 “ staircase occupy the back part; and there is frequently
 “ a smaller room added behind. There are commonly
 “ four stories, besides the one under the level of the
 “ street.

“ The town is fully inhabited; there is hardly a house
 “ unoccupied*.

“ The number of inhabitants is very little known:
 “ calculations of various kinds have been made by many
 “ authors, but these have been founded on elements en-
 “ tirely conjectural, and are therefore of no use. As far
 “ as my own opinion goes, and nothing better than opi-
 “ nion can be formed in this case, they are about a mil-
 “ lion. They consist of classes living in very different
 “ manners.

“ The first class includes those living on their paternal
 “ fortune, or riches suddenly acquired, comprehending a
 “ few merchants. The women of this class live almost
 “ constantly in their houses, which are very close, al-
 “ though the rooms are spacious, and the whole house
 “ perfectly clean and neat, or in carriages, with no labour
 “ and little exercise. This gives them a delicacy in their
 “ appearance, hardly to be described. As a flower brought
 “ forward by the cherishing heat of a conservatory,
 “ where it is defended from the nipping winds, exceeds
 “ any thing produced by nature alone, like it, they too
 “ have a tenderness of constitution which subjects them to
 “ disease from the slightest exposure to any cause.

* The risk of being unoccupied, is not less than one in twenty-five, or four per cent.—J. M.

“ Their

“ Their situation, however, prevents them from being
“ often exposed to infection or sudden cold, which are
“ the great causes of violent diseases in this metropolis.
“ Their complaints therefore are generally slight, and
“ very irregular; nor can they bear medicines in any
“ way of a rough nature: their disorders must therefore
“ be touched with the slightest hand. This has often
“ produced an imbecillity of practice, not only in London, but throughout the kingdom, which first infects
“ the medical people who are immediately employed in
“ the disorders of this class.—Although there may sometimes perhaps be found one or two among these who
“ are not the most learned or judicious practitioners, yet
“ they are the richest, which contributes not a little to
“ the spreading of this infection. Notwithstanding the
“ diseases of the women of this class are frequent, yet
“ they are seldom fatal, so that they often live to a great
“ age.

“ The men of the first class are much in the air in the
“ morning, and use exercise. They live in the country
“ part of the year, when they are often occupied in hunting and shooting. With some exceptions, they are
“ of constitutions sufficiently strong; are seldom diseased;
“ their diseases are strong and marked, and they bear the
“ operation of powerful remedies.

“ The men who are menial servants of this class, like
“ the domestic slaves of the antients, are idle, lazy; use
“ little exercise; none when they can avoid it: they are
“ thus rendered irritable; and being often exposed to all
“ the inclemency of the weather in the winter season,
“ often till three or four o'clock in the morning, they are
“ exceedingly subject to disease, particularly of the thorax; and few of them attain to any great age, except
“ those of the higher ranks.

“ The

“ The women-servants resemble, in their constitutions,
“ their mistresses.

“ The clergy are fewer here than in almost any other
“ country in Europe. They are very apt to be affected
“ with hypochondriacal complaints ; but being in general
“ regular in their manner of living, they often attain to a
“ great age.

“ The lawyers who are occupied in business, are often,
“ from their great attention and labour of mind, weak,
“ and disordered in their *primæ viæ*. Those who are not
“ employed, may be considered as in the same state with
“ the independent gentlemen.

“ Physicians are so few, that it is hardly worth enu-
“ merating them. There are not much above two hun-
“ dred in all, and not near half that number are employed
“ in practice. Except when they are cut off by infec-
“ tious fevers, before they are habituated to infection, al-
“ though often diseased, physicians generally attain a con-
“ siderable age.

“ Attornies and apothecaries are to be considered, in
“ their manner of life, and constitutions, in the order of
“ tradesmen.

“ Merchants and traders of consequence form the next
“ class. The women of this class live a regular life,
“ going to bed generally before midnight, and rising about
“ nine in the morning. Most families have villas near
“ town, where the women pass much of their time; espe-
“ cially during the summer season. They are much more
“ in the air, and consequently have neither the delicacy
“ nor the irritability of the class we have first enumerated ;
“ enjoy a much better state of health ; their diseases are
“ more regular, and they bear the action of powerful re-
“ medies. Of the men of this class, some lead a seden-
“ tary life ; their time is much employed in writing, ge-
“ nerally

“ nerally leaning on their breasts : such are subject to
“ complaints in their *primæ viæ* ; others of them use ex-
“ ercise, especially on horseback, and often sleep in the
“ country : all of them, in point of eating, are luxurious.

“ The lesser tradesmen, shopkeepers, and manufactu-
“ rers, are also sober and regular in their manner of life ;
“ but they are much confined to their houses, especially
“ the women of this class, which renders them irritable,
“ and subject to disease, often violent and fatal. Nor is
“ that part of the men whose business calls them abroad,
“ less subject to morbid affection, so that they rarely at-
“ tain to great old age.

“ The last class consists of the working part of the
“ manufacturers, and labourers of all denominations ;
“ who, with some exceptions, are the most disorderly,
“ profligate, debauched set of human beings perhaps on the
“ whole earth ; working hard, and being dextrous in
“ their occupations, and of course earning large sums of
“ money, which they spend in drinking, exposing them-
“ selves at the same time to the inclemency of the wea-
“ ther ; always idle while they have any money left, so
“ that their life is spent between labour and attention
“ above their powers, and perfect idleness and debauchery.
“ Their women also, passing from affluence to distress
“ almost every week, are forced, although soberly inclin-
“ ed, to lead a very disorderly life. Pulmonary com-
“ plaints are more particularly common and fatal in this
“ class, as well as all other diseases.

“ London is fatal to infants in general. On a com-
“ parison of charity children sent to be nursed in the en-
“ viron, with those nursed in town, it appeared the loss
“ in town, being 39, was only 29 in the same number
“ and time in the country. But if this loss is great alto-
“ gether, it is tremendous among the lowest class, the
“ mothers

“ mothers being almost always obliged to labour for their
 “ bread, and often even robbed by their husbands, have
 “ no time left to take the care necessary for the rearing of
 “ infants, so that they are often left to wallow in dirt,
 “ notwithstanding the general disposition to cleanliness in
 “ this country, and can never receive that exercise, or
 “ purity of the air, which is requisite; nor can their food
 “ be at all attended to.—Add to this, a pernicious prac-
 “ tice of continuing to give them suck for even two or
 “ three years, by which they hope to prevent their hav-
 “ ing charge of many children. This pernicious prac-
 “ tice goes even to some mothers of the ranks above this;
 “ while mothers in the higher ranks refuse the natural
 “ sustenance to their infants, leaving them often to the
 “ care of strangers regardless of motherly affection. From
 “ all these causes, the loss of children in London is more
 “ than one half, before they attain the fifth year of their
 “ age.”

SECT. III.—CLIMATE.

THE temperature of the atmosphere, except perhaps so far as the influence of the London fires extend, is nearly the same through the whole county, there being no situation so much elevated as to produce the cold and thin air that we find in mountainous countries.

In general, it is healthy, owing to the greater part of the soil being *naturally* dry; and the more moist situations being well drained, are consequently free from those unhealthy vapours which usually arise from stagnant waters.

The fires of London, in which are consumed about 600,000 chaldron of coals annually, have a sensible effect on the climate in its neighbourhood, by drying and warm-
 ing

ing the atmospherical air; which, being thus rarefied by heat, constantly passes upwards, and makes way for a fresh supply to come in from every side.

The more stationary winds are from the south-west and the north-east: all others are variable and unsettled. Those from the south-west are supposed to blow nearly 6-12ths of the year, and those from the north-east about 5-12ths. The varying winds blow from all the other points of the compass about the other 1-12th. The winds seldom blow with so much force in this district, as to shake the grain out of the ripe ears of the standing corn*.

The greatest falls of rain generally come from the south, or perhaps from a point or two west of the south, and are most certain when the wind has passed through the east to the south.

In the spring months, the damp on low ground is sometimes congealed by cold, when there is no such appearance on the hills, and thereby some of the young shoots of the more tender shrubs and plants are destroyed in the former situation, when no injury happens to those in the latter.

So great has been the extremes of heat and cold, at some particular times, that on the 16th July 1793, the thermometer rose as high as $83^{\circ}\frac{1}{4}$ †, and on the 24th January 1795, it fell down to 6 degrees below O; though this, perhaps, is the greatest difference in respect of climate ever observed in this kingdom; happily, however, it never continues more than a day or two at such extremes.

The salubrity of any district is certainly affected in a great degree by the state of the soil, and shape of the sur-

* Perhaps it would be more accurate to say, that wind from various points at and near the south-west blow about 25; north-east 20; and from the rest of the circle, near 7 weeks in every year.—*J. M.*

† The thermometer rose to $83^{\circ}\frac{1}{2}$ on the 21st July 1797, at which height it continued for two or three hours, and on the 24th it was at 84° for near half an hour.—*J. M.*

face of such district ; and hence it follows, that the natural climate of most or all countries, may unquestionably be considerably improved by using the means best calculated to procure an equable degree of shelter, dryness, and moisture ; all which may be effected in bleak, dry, and comparatively barren situations, by dividing them into small inclosures with broad hedge-rows and plantations, in belts of several yards wide ; and in low flat situations, by draining off the stagnant water, by enlarging the inclosures, thinning and clipping the hedge-rows ; in some instances, by grubbing up not only these hedge-rows, but also copses, woods, and plantations, thus removing every obstruction to a free circulation of air. This will necessarily absorb and carry off the redundant moisture, and consequently render the climate salubrious and comfortable.

Indeed too much attention cannot possibly be paid, in cases of inclosures, plantations, &c. to the grand articles of drainage and shelter, and also to the nature and situation of the soil ; as by a proper regard to these objects, not only the healthiness of the climate, with respect to animals, will be promoted, but the fruitfulness of the soil will be increased in a degree not otherwise to be expected.

For additional observations on climate, see Dr. Fordyce's account of London, under section Divisions.

SECT. IV.—SOIL AND SURFACE.

SOIL.

THE following observations are offered in a very general way. To delineate the variety of soils, so as accurately to draw the lines between them, would require much more time,

time, even supposing it possible to investigate every part of the county, than can be expected in a work of this kind.

A surface of perfect sand, clean gravel, or pure clay, is not now perhaps to be found in any part of the county. The top soil has every where been ameliorated or changed by the operation of the elements, by manure and cultivation; these powerful agents have made the surface of all the lands in this county assume, more or less, the appearance of loam*.

Sand and Gravel.—Hampstead-hill consists of eight or ten feet of yellow iron-stained sand, with some loam and rounded flints, on a pure white sand of many more feet; and at the depth of about 150 feet are springs. The surface is covered with furze, except where the ground is dug.

The summits of most of the highest hills in the county consist of *sand and gravel*, though frequently intermixed

* The following account of the soil and fertility of Middlesex, extracted from Norden's *Speculum Britanie* (written in the reign of Queen Elizabeth), may amuse the reader, who wishes to compare antient with modern times.

"The soil of Middlesex is excellent fat and fertile, and full of profite: it yeeldeth corne and graine, not onlie in abundance, but most excellent good wheate, especiallie about Heston, which place may be called *Granarium tritici regalis*, for the singularitie of the corne. The vaine of this especiall corn seemeth to extend from Heston to Harrow on the Hill, betwene which, as in the midway is *Perivale*, more truely *Purivale*, &c. &c. Yet doth not this so fruitful soyle yeeld comfort to the wayfaring man in the winter time, by reason of the claiesh nature of the soyle: which, after it hath tasted the autumnne showers, waxeth both dyrtie and deep: but unto the countrie swaine, it is a sweet and pleasant garden, in regard to his hope of future profite, for

"The deep and dirtie loathsome soyle

"Yeelds golden gaine, to painefull toyle.

"The industrious and painefull husbandman will refuse a pallace to droyle in these golden puddles."

The wheat of Heston was so famous, that Queen Elizabeth, as is reported, had the most part of her prevision from that place, for *manchet* for her Highness's own diet.

with loam. I observed in the old inclosures, and on Enfield-chase, in various places, that when the gravel is very near to the top, a full crop of yellow blossomed broom covers the ground, if in a state of grass; and when ploughed, an equally full crop of sorrel.

*Loamy Sand**.—Or dry turnip and barley land, will include all that portion of the county lying between the road leading from Hounslow to Colnbrook on the north, and the river Thames on the south, containing in depth from one foot to three (though for the most part from eighteen inches to two feet), on a gravel of small flints, six, eight, or ten feet in thickness, with a subsoil of blue tile earth.

On the east side of the county, the whole way from Tottenham to Enfield-wash, the superstratum is of the same light nature; of from six inches to two feet in depth, on a gravel of small flints, which can only be dug for the repairing of roads to the depth of from two feet to five, owing to its then putting on the appearance of a quick sand, so filled with water as to prevent all deeper digging. There is some poor land about the extreme west end of Hounslow-heath, and doubtless in a few other places.

Sandy Loam†.—Will include all the land between the Colnbrook and Uxbridge roads, on the west side of Hanwell and Hounslow, of from eighteen inches to upwards of five feet in depth, on six or eight feet of the gravel of flints on a subsoil of blue tile earth.—Of this description is the south side of the parish of Harefield, and the parishes of Twickenham, Isleworth, Ealing, Chiswick ||, Ken-

* The basis, or greater part of this soil, is supposed to be sand.—*J. M.*

† This soil is supposed to contain a less proportion of sand than the last.—*J. M.*

|| "The soil of Chiswick, is from a strong to a tender or sandy loam; and " from a rich and fertile, to a white and sharp sand and gravel."—*P. Foot.*

sington, Fulham*, Brompton, and Chelsea: at the last place, this soil has been most highly enriched by cultivation and manure.

Strong Loam.—All the land from Riselip and Ickenham, on the west, to Greenford, Apperton and Harrow, on the east, and between Pinner on the north, and Northcote on the south, is composed of strong loam. The land about South Mims is also of this kind.

The level between Islington, Highgate and Hornsey, is a strong but very productive loam.

Loamy Clay.—Such is the north aspect of a hill between Uxbridge-common and Harefield, the land north-west of Riselip, the greater part of Hanger-hill, a wood near the east end of Hillendon-heath, and the land between the river Brent and Hampstead, on the Hendon road. The meadows on the north-west side of Hendon church, towards Page-street, are of nearly the like kind: much of this parish, indeed, is of a clayey nature, yet there are patches of sand, and more of gravel. From Nightingale-hall, by Colney-hatch, to Whetstone, the land is of a loamy clay, mixed with pebbles of flints: and from Potter's-bar, for about two miles towards South Mims, the soil is the same. The north side of Highwood-hill has a thin skin of loamy clay on a subsoil of yellow clay; and in many of these places, the subsoil is a yellow clay, but all the varieties abound with rounded flints.

I have not met with any of this land on the borders of rivers, nor much on any level low ground, nor on the tops of the highest, but generally on the tops of the lower hills, and on the sides of all. All the hollows, bowls and chinks, are filled with gravel, as nuts may be contained

* "The district of Fulham, consists of a light black and fertile soil.

"The lands round Harmondsworth, consist of a light loam and gra-

"vel."—P. F.

in a basin. This is particularly visible in soils that have been but little or not at all cultivated, as Enfield-chase; and it is a most unpromising circumstance to the cultivator of such an obdurate and variable soil.

Clay.—The most tenacious, obdurate and ungrateful soil known; very different from marsh land; the deposit of water. This, like other upland soils, contributes some of its richest particles towards the formation of marsh land in low situations.

It is no wonder there should be such a diversity of opinion respecting the management of clayey soils, when opinions upon the nature of clay are so very discordant. Many of our best writers on agriculture, indeed, err so greatly, as to call the most highly enriched sediment, or deposit of large rivers, by the name of clay. Others have denominated the half-dissolved chalky marl of Essex, Suffolk, and Norfolk, by the same name, and hence they have attributed great fertility to clay, a quality which I have never yet found *real clay* to possess. How, indeed, can a soil that is naturally tough, gluey, wiry, and sticking to every thing brought in contact with it, while wet; and assuming a stony hardness when dry, possibly be deemed prolific? Its pores seem to be shut up or closed in wet weather; and in dry summers, it appears to be equally ill calculated to permit the free and easy growth of vegetable roots. It is certain, that corn, grasses and herbs, root very little into it. The ploughing it up (where it lies so near the surface as to be accessible to the plough), is injurious to the surface soil and future crops. In Middlesex, it is called "ploughing up poison."

I believe that tobacco-pipe clay, and the clay used in making the Staffordshire ware, are equally enemies to vegetation.

Peat.

Peat.—The moors near the river Coln, the whole distance from Rickmansworth to Staines, consist principally of peat, on a substrata of the *gravel of flints*, which every here and there shews itself even at the surface; and probably peat may be found on the borders of the river Lea, and the Isle of Dogs; but I have had no opportunities of ascertaining this.

Marsh Land—The deposit of still water, is a peculiarly rich loam; very different from the loam of uplands, and equally so from clay. It abounds with the richest parts of every soil, and of animal substances which have been dissolved and washed from all the higher grounds, villages, towns and cities. The Isle of Dogs, which contains near 1000 acres; most, or all, of the land on the flat borders of the rivers Lea and Coln; some inconsiderable quantity of land on the sides of the Brent; the small islands in the river Thames, and many pieces of land situate in the various nooks and windings of that river, come under this description*.

SURFACE.

* One of the returned Reports has the following marginal observation:—

“ The most fertile part of this county is within eight or ten miles of the metropolis, and that improved by the advantage of manure. In the western part, the soil thin, and underneath is a cold gravelly clay: the eastern part more fertile, there being a good staple, and underneath is a good loam, or loamy clay. The northern part varies much, some part of a good loamy clay, that bears excellent wheat, and smutty wheat hardly known; in other parts, very little distance, a gravelly clay, and not very fertile.

“ The land in this hundred (Edmonton) is chiefly employed in raising crops for market, no advantage being made in breeding cattle, as by the middle of November the land in general is so wet, that what remains on the land is but of very little use for heavy cattle, but is disposed of by three months walk for store sheep out of Hertfordshire.

“ In these vicinities (Finchley, Highgate, Hornsey and Hampstead) the dependance is hay for London markets, and the latter-math for their suckling sheep, for house-lambs, which no county is equal to it for number and quality, by which the farmer becomes wealthy.

SURFACE.

THIS county, from its gentle waving surface, is particularly suited to the general purposes of agriculture: it being sufficiently sloping, to secure a proper drainage, and at the same time without those abrupt elevations which in some places so much increase the labour and expence of tillage; and from its being entirely free from large stones, those powerful enemies to the free operations of the plough.

It is true, it can no where make pretensions to what is called the picturesque: no rugged woody mountains, nor craggy ivy-bound rocks, here present themselves to intercept the traveller on his way, or to captivate the fancy of the painter; but the more chaste, beautiful, and ornamented scenes of nature, are found in almost every part of the county. The inequalities of the surface which we meet with in this district, contribute to health, ornament and beauty. Here are not many dingy heaths, nor sombre coloured woods, to offend the sight in the gay season of May; but shady groves, diversified plantations, and meandering rivers. Numerous villas, ornamented grounds, lawns, and medallions of beautifully flowering shrubs, almost every where present themselves to the view of the traveller; which, together with the great number of lofty spires, and gay carriages, cannot fail to remind him of being in the vicinity of a metropolis which may very justly be called the centre of commerce, wealth and fashion.

“ And in these vicinities (Newington, Clapton, Hackney, Bethnal-green and Stepney) leading to Oldford through the marshes bordering on Hackney and Tottenham, the land, part arable and part meadow, is a rich, mellow, loamy soil, where agriculture may be displayed to great advantage.”

Having

Having thus attempted to give a general idea of the face of the county, I shall now proceed more particularly to describe the varieties in the surface of it.

The north border of the county is high ground, and, by the shelter it affords, adds considerably to the fruitfulness of the other parts.

The principal hills are Highwood and Hendon; the hill at Barnet; another between that place and Elstree; also Brockley-hill, which, together with Highgate and Hampstead hills, are the highest in the county. Their summits are nearly of the same level, which is about four hundred feet above the level of the tide*.

The soil on the north side of all these hills, is evidently more chilled, and less productive, than on the south side.

From Norwood to Cowley, for a length of six miles on the Uxbridge canal, the surface is eighty-five feet above low water mark at Brentford-bridge; at Uxbridge it is ninety-six feet; and in Harefield marshes it is one hundred and seven feet above the said mark.

All the land to the south of the road passing from Brentford through Hounslow to Longford, is so nearly level, as to have no more than a proper drainage, and much the greater part of it is less than ten feet above the surface of the river Thames at Staines-bridge, and not

* I think Hampstead is a little higher than Highgate, and as it is considerably higher than Harrow, and most other ground in the county, I shall estimate its apparent height in the following manner, viz. as near as I can judge by the eye, it is a small matter higher than the top of St. Paul's cross; therefore, suppose St. Paul's church-yard to be above the tide - 30 feet
The height of St. Paul's is said to be - - - - 340 feet
And I think Hampstead is higher by about - - - - 30 feet

which several dimensions make Hampstead to be above the level of the tide - - - - - 400 feet,
as I have stated.—*J. M.*

more than from three to five feet above the level of the rivulets flowing through this district.

From Staines, through Ashford and Hanworth commons, to Twickenham, a distance of seven miles and an half, is a perfect level, and generally of from ten to twenty feet above the surface of the river Thames.

Hadley is a village consisting of small genteel houses, on high ground for this county; the land composed of a loamy gravel of flints; and on that side next the common, it has a charming view down the vale over East Barnet to the river Thames. This place affords one of the many proofs round London, that even a very poor soil on a hill, is more valuable than the richest soil in a low situation; for this hill is naturally of the first description, but owing to its elevation, and overlooking some more fruitful and pleasant vales, it has acquired an higher value than the most productive vallies. The same observation applies to Hampstead, Highgate, and many of the high grounds in this county.

Round the one mile stone on the Kingsland road, the surface is lowered from four to ten feet (average five) by the earth having been dug, and manufactured into bricks, over an extent of 1000 acres or more; and except where the owners of the soil have been negligent of their interest, and where the works are now carrying on, it has been levelled, ploughed, and laid down to grass. It is sufficiently dry, and by the aid of town manure, is restored again into excellent grass land*, previously having yielded
to

* The following observations were received in a letter from Col. Clithrow.—“ It may not be amiss to call your attention to the valuable article of
“ *brick earth*. It has appeared to me, when the soil has been carried away,
“ the greatest attention should be paid to the manuring and cultivation of the
“ fields so dug: the ease with which manure is procured from London,
“ would very soon replace the damage arising from removing the soil. It
“ does not appear that sufficient attention is paid to the quality of the ma-
“ nure, neither does it appear that the lands are properly drained. The
“ brick

to the community, through the medium of the brick-makers, upwards of 4000l. an acre*, on an average of the whole level; but there are a few acres of choice malin (marl) earth, which have produced, through the same medium, 20,000l. an acre†.

“ About twenty years ago, the sum usually paid by the
 “ brick-maker to the owner of the soil for an acre of
 “ brick earth, was 100l. But the price of this, like other
 “ commodities, has been rapidly increasing, and indeed
 “ has gone as high as 350l. per acre. The common way
 “ now is, for the proprietor to receive from one shilling
 “ to half a crown per thousand, and after the brick earth
 “ is completely manufactured and carried away, the ground
 “ is returned in a level state. The common calculation is,
 “ that there are one million of bricks per acre in every foot

“ brick earth itself is so valuable an article, it seems to engross the ideas of
 “ the proprietor, without considering the quickest method of recovering
 “ the soil.”—*James Clitherow.*

There is generally a difficulty in getting the brick-makers and gravel-diggers to level the mounds occasioned by their works, and in leaving the soil dry; in a very few instances, indeed, they have even sunk the surface so much as to occasion ponds of small extent. The best remedy for this, and other matters of a like nature, would be, for the owner of the soil, or his agent, to make the most especial agreements or leases; and afterwards to give such attention as would secure the covenants being duly executed. It would promote this end, to sell the earth at per thousand on the bricks, to be regulated by the quality of the soil.—*J. M.*

* Four million of bricks, at 25s. is	5000l.	
Deduct for brease	—	1000l.
Produce of brick earth	4000l.	
† Three feet surface, three millions, at 25s. is	3750l.	
Three feet of second malms, at 40s. is	6000l.	
Four feet of washed malms, at 60s. is	12,000l.	
	21,750	
Deduct for brease, &c.	—	1,750
Produce of the brick earth,	—	20,000l.— <i>J. M.</i>

“ in depth, including the ashes that are mixed with the
 “ earth ; and, one field with another, that the brick earth
 “ is four feet deep. The bricks called grey-stocks, for the
 “ outside of houses, sell at a guinea and an half per thou-
 “ sand, carriage included. Place bricks, for inside work,
 “ at twenty-four shillings.” These fields lie close to the
 town, where manure is to be had in any quantity ; and as
 the carriage costs but little, they are repeatedly dressed, by
 which means they soon recover their former fertility.—
 “ There are many who object to such a manufacture be-
 “ ing suffered in the neighbourhood of the metropolis,
 “ considering it offensive and unwholesome. On the
 “ other hand, it is contended that fire is a great purifier
 “ of the atmosphere ; and that in close and hot weather,
 “ a number of brick-kilns near London is of real use
 “ to the health of the inhabitants,” by promoting a change
 of air,

SECT. V.—MINERALS.

I HAVE not met with any stratified-rock stone, such
 as freestone, limestone, slate, &c. in this county ; nor
 are any pebbles of the like stone found in the rivers, ex-
 cept such as have come there fortuitously ; the immense
 quantity of stone used in the metropolis, and in the county
 in general, is necessarily brought from other places.

Lead, copper, silver, and perhaps gold and other me-
 tals, are usually found in limestone strata*. I do not
 know whether they are ever met with in a natural state
 out of it, and suspect this stone of contributing towards
 their formation. But be that as it may, limestone has not

* Iron excepted, which, I believe, is never in a natural state in limestone
 strata.—*J. M.*

yet been discovered in this county, and we are still in the dark with respect to any knowledge of its metals.

The immediate subsoil of the county, for the most part, consists of a gravel of flints, which is also found in the beds of most or all of the rivers; and under that, for the most part, blue tile earth.

Coals have not yet been discovered in the county, nor do I believe sufficient trials have been made to find out whether there are any or not.

Till some person of landed property shall have so much spirit as to dig or bore three or four hundred fathoms or more in depth, we shall not know what treasures are hid beneath the surface: in more mountainous places, nature shews her stores, or at least the usual accompaniments thereof, to the eye of a naturalist, without the trouble of digging or boring: but under the smooth and level surface of Middlesex, they must search deep, who would obtain the prize of either coals or limestone.

For mineral springs, vide sect. 6. water.

SECT. VI.—WATER.

THIS county is most excellently and abundantly supplied with this very necessary and useful article.

The principal river is the Thames, which is divided, as before described, by this county and Surrey, for about forty-three miles, navigable the whole distance. With this river are connected inland navigations, which make a communication between it and the water of the Severn, the Mersey and the Ouse; and consequently a connection with the trade of Bristol, Liverpool and Hull. The largest ships in the service of the East India Company can safely come up this river, to the edge of the county, at Black-wall.

wall. The tide flows for about twenty-three miles along the side of the county.

To this noble and capacious river, the county of Middlesex, and indeed the kingdom in general, is much indebted for the assistance it affords; not only as an easy and cheap conveyance of the products of our island from one part of it to another, but also as being the means of bringing to our very doors, the various productions of the whole habitable globe: serving, at the reflux of the tide, as a useful drain to carry off all the superfluous water and filth of the capital, and surrounding country: then, by the wonderful operations of nature, returning to us with its excellent streams purified and refined, ever presenting a new and inexhaustible supply of fresh water; an article so indispensable to the ease and comfort of man*.

* From the river Thames, by means of the extensive water-works at the Middlesex end of London-bridge, a part of London receives a never-failing supply of water, conveyed in pipes, laid under the streets, in almost innumerable ramifications. "Also the water-works at Shadwell, which were first established in 1669, serve a district containing nearly 8000 houses, besides public buildings, extending from the town to Limehouse-bridge, and from Whitechapel to the river Thames. It is worked by one of Bolton and Watts' improved engines, which has the power of raising the water at the rate of 2853 tons 152 gallons in a day of fourteen hours, the usual time of working it."

Again at Hungerford, there are established the York Buildings water-works, which serve to supply that part of the town which is in their immediate vicinity.

In addition to this liberal supply of water received by the inhabitants of London and its neighbourhood, from the Thames, at these several places, there are also some considerable water-works at Chelsea, "which were constructed about the year 1724: a canal was then dug from the Thames, near Ranelagh, to Pimlico; where there is a steam engine erected to raise the water into pipes which convey it, in various directions, to the village of Chelsea, to Westminster, and various other places at that end of the town. From these works the reservoirs in Hyde-park and the Green-park are also supplied.

"In a calculation of the quantity of water supplied daily by the several water-works in the neighbourhood of London, anno 1767, those last mentioned (Chelsea) are said to yield 1740 tons."

It

It is beautifully and characteristically described by Sir John Denham, in the following lines :

" Tho' deep, yet clear; tho' gentle, yet not dull;

" Strong, without rage; without o'erflowing, full."

The fish that are chiefly found in the river Thames, are tench, barbel, roach, dace, chub, bream, gudgeon, ruffe, bleak, cray fish, eels, smelts and flounders; whereof the three last are particularly good.

The river *Lea*—which forms the eastern border of Middlesex, is also particularly convenient to the inhabitants of that part of the county. Upon this river a very extensive trade is maintained, both by this county and Hertfordshire.

The river *Coln*—on the west side of the county, is principally applied to the purpose of working the several mills that are erected over it.

The river *Brent*, which rises in Hertfordshire, enters Middlesex near Finchley; and, after taking a circuitous course through the county, forms a junction with the Thames at Brentford (the county town) which derives its name from this river*.

The *New river*, or Sir Hugh Middleton's canal, is a very extensive aqueduct, which, after running a course of nearly twelve miles from its source in Hertfordshire, enters this county at Bull-cross, and in a very winding route of twenty-four miles more, passes by Enfield to Islington, where it is received into a large bason: nineteen miles in a straight line from the spring. Thence, by means of the necessary engines and pipes, the water is conveyed to most parts of London and the northern environs; thereby furnishing the inhabitants of this part of the metropolis

* Though this is called the county town, there is neither town-hall, nor any other building of that nature.—*J. M.*

with

with a constant and regular supply of most excellent clear soft water, principally drawn from the chalk hills of Hertfordshire*.

Besides the foregoing, there is also the small river *Crann*, which takes its rise in the common fields between Pinner and Harrow, and after passing under Cranford-bridge, and across Hounslow-heath, enters the Thames at Isleworth. Add to this, another small river, called *Crane*, which rises on Harrow-Weald common, and, passing by Apperton and Hanwell, falls into the Thames at the same place.

There are also four branches from the river Coln, near Longford, which pass through various parts of the county, one of which, called the New river, passes by Hanwell and Hounslow-heath, through Hanworth-park† and Bushey-park, to the Thames at Teddington. Another branch passes near Staines and Littleton, to the Thames at Sunbury.

The *Serpentine river* in Hyde-park‡ was made about the year 1730. The water is supplied by a small stream

* On the borders of this river many beautiful situations present themselves to the view, peculiarly adapted for the reception of genteel villas, &c. The great convenience of this canal, in supplying the inhabitants of this part of the county, for about twenty-one miles in length, with plenty of soft water, is not its only recommendation; for to this may be added, the great pleasure it affords to anglers and others, in fishing in its streams, or strolling on its banks; besides the additional beauty it imparts to the landscape, as its pure and gentle waters glide along.—*J. M.*

† This stream is used here for the purpose of irrigation; and this is, I believe, the only place in the county where water is thus usefully applied.—*J. M.*

‡ “Hyde-park, by an actual survey in 1652, contained about 620 acres, valued at 894l. 13s. 8d. per annum; the timber on ditto, valued at 4779l. 19s. 6d.; the deer at 300l.; the materials of a lodge 120l.; and those of a building designed for a banquetting house at 125l. 12s. The park was divided into lots, and being sold to several purchasers, produced the sum of 17068l. 6s. 8d. including the timber and deer. The present extent of Hyde-park, according to a survey taken in 1790, is 394a. 2r. 38p.”—*Lytton's Environs of London.*

which

which rises near West End, Hampstead, passes by Kilbourn-wells and Bayswater, and thence through Kensington-gardens and Hyde-park, to the Thames at Ranelagh.

There is likewise a navigable canal leading from Hertfordshire, along the banks of the river Lea, with which it forms a junction in the neighbourhood of Bow *, from whence the united streams run to Bow Creek, and incorporate themselves with the water of the Thames.

The Braunston, or Grand Junction canal † also (for the making of which an act passed in 1793, and in which considerable progress has been made) enters this county near Uxbridge, passes by Drayton, runs near to Cranford, at a little distance from Osterley-park, and after incorporating itself with the Brent, forms a junction with the river Thames at Brentford.

These are the principal rivers and canals, which, together with a considerable number of smaller streams and rivulets, add beauty and ornament to the county, furnishing at the same time a plentiful supply of water as well as the means of conveyance for the produce of the soil, and returning that necessary article manure. They serve also the valuable purpose of turning mills, &c. and in many instances, might with great facility be still further applied to the useful purpose of irrigation.

Spring water is to be obtained in many parts of the county, by sinking to a depth of no more than five feet; and in most parts, it is to be found at a depth of twenty feet below the surface; though in the low bottoms of strong loam there are some instances of digging one hundred

* There is a branch belonging to the river Lea navigation between this place and Limehouse, called the *Limehouse cut*.—*J. M.*

† For a further account of this canal, vide the article canals.—*J. M.*

and fifty feet deep, or more, for water*; and even on the very borders of the Thames, to a much greater depth†.

“ At

“ In the year 1791, the present vicar of Northall (Mr. Archdeacon Eaton) agreed with Mr. White of Putney, to sink a well in the court adjoining to the vicarage. The workmen first dug through a bed of solid blue clay sixty feet in depth; under which was a stratum of rough porous stone about a foot thick. To this succeeded a second stratum of clay (differing a little from the former in colour) twenty-nine feet in depth; then a stratum of fine grey sand intermixed with extraneous fossils, as oyster shells, bivalves, &c. This stratum continued for twenty-three feet; and was succeeded by another of clay, of a red, or ferruginous colour, less firm in its consistence than that which occurred before, and intermixed now and then with gravel and stones of a considerable size. After digging through this stratum for fifty-one feet (at the depth of 164 feet from the surface), water was found; which, on the removal of the stone which lay immediately over the spring, burst up with such force, and in such abundance, that the workmen immediately made the signal to be drawn up. Within the first four hours after its discovery, the water rose to the height of eighty feet; in the next twenty-four hours about forty feet more; after which it continued to rise gradually for the next fortnight, till it reached its present level, which is only four feet from the surface of the earth, the depth of the water being now 160 feet.

	Strata.
1. Clay - - - -	60 feet.
2. Stone - - - -	1
3. Clay - - - -	29
4. Sand - - - -	23
5. Clay - - - -	51

164 feet.

“ Mr. Eaton kindly permits the inhabitants of Northall to have free access to this well, though close adjoining to his house.”—*Vide Lyson's Middlesex.*

† At Mr. Munday's brewery at Chelsea, in this county, a well was dug about the year 1793, to the depth of 394 feet, within 20 or 30 feet of the edge of the river, mostly through a blue clay or marl. At the depth of about 50 feet a quantity of loose coal about twelve inches in thickness was discovered; and a little stratified sand and gravel was found about the same depth. The well digger usually bored about 10, 15 or 20 feet at a time lower than his work, as he went on; and on the last boring, when the rod was about 15 feet below the bottom of the well, the man felt, as the first signal of water, a rolling motion, something like the gentle motion of a coach passing over pavement: upon his continuing to bore, the water presently pushed its way by the side of the auger with great force, scarcely allowing him time to withdraw

" At the entrance of Acton, on the London side, is a convenient conduit for the benefit of the public.

" On Hampstead-heath are several springs belonging to the Hampstead water-works.

" There are several springs of mineral water in various parts of the county, some of which have been celebrated for their medicinal virtues, viz.

" About half a mile from East Acton, are three wells of mineral water, springing out of a deep clay, which were in great repute for their medicinal virtues about the middle of the present century.

" On the side of Hampstead-hill, to the east of the town, is a spring of mineral water strongly impregnated with iron, which was formerly much frequented.

" At Bagnigge-wells are two springs of mineral water, one of them chalybeate, the other cathartic."—Vide *Lyson's Middlesex*.

withdraw the borer, put that and his other tools into the bucket, and be drawn up to the top of the well. The water soon rose to the height of 200 feet.—*J. M.*

" On the west of a small brook, which runs by Kilbourn and Bayswater, in the parish of Paddington, where the soil is a deep clay, the springs lie very far beneath the surface : on the sinking of a well here, some few years ago, by Mr. Colson, the workmen dug near 300 feet before they found water. In sinking this well, the workmen dug through a bed of bluish clay to the depth of about 100 feet, when, after passing a thin stratum of stone, they came to another bed of clay of the same quality and colour ; through which they dug without further interruption till water was found at the depth of nearly 300 feet from the surface.

" In digging another well in the same neighbourhood, water was found at the depth of 250 feet, which rose with great rapidity till it came within 70 feet of the surface, after which it continued to rise, very gradually, a few feet higher, at which height it stopped."—Vide *Lyson's Middlesex*.

Mr. John C. Falck suggests the propriety of "stocking all the reservoirs and waters belonging to canal navigations with fresh water fish ; and says, that in Germany, the fish ponds form a special part of husbandry, and which Russia has introduced and adopted all over its empire, as a great source of nourishment to the poor country people." He adds, that "it is entitled to some attention as an article of commerce, and that the spawn of sundry fish for the said ponds, might be procured from the continent."

If Mr. F. means *German* carp, they are not of any value.—*J. M.*

CHAPTER II.

STATE OF PROPERTY.

SECT. I.—ESTATES, AND THEIR MANAGEMENT.

AN increasing wealth, among the more numerous classes of the community, has a direct tendency to produce the division and subdivision of landed property; and accordingly we find, that, as the number of this description of persons is larger, so estates are less extensive in this county, than in any that are remote from the capital.

The increase of money, by means of the general industry in trade and commerce, among the inhabitants of the metropolis, necessarily induces those persons who have large properties to dispose of, to divide them into as many lots as can conveniently be done, in order to increase the number of purchasers: as it is a well known fact, that estates will sell for a larger sum, when thus divided, than could be obtained for them in one lot.

From this circumstance, I apprehend, the number of the proprietors of land is still on the increase, and so also is the number of those gentlemen who occupy their own property, many of whom keep their grounds in such a superior state of cultivation and embellishment, as would undoubtedly render it a very pleasing task for any person of competent talents, to collect and describe their several excellencies and beauties. But as a work of that kind, however pleasant and desirable, would occupy several volumes, it will immediately appear to be incompatible with the limits of this Report. I might perhaps have
ventured

ventured on the description of a few of the principal estates; but as that would necessarily occasion the omission of many others, some of them, perhaps, of greater merit than those I might select for my purpose, and as a preference in this case might not be altogether well received, I hope I shall stand excused for the omission, in respect of this part of the work.

Estates are, for the most part, under the management and direction of attornies-at-law, whose attention to these concerns seldom extend any further than to receiving the rents at their own houses or chambers, generally in London, and in drawing leases from old precedents: men who are not at all skilled in the business of agriculture; which, from the nature of their profession, cannot be expected. They totally neglect the more essential matters, such as protecting the land against an injudicious or exhausting course of crops, and of taking care that the buildings, fences, gates, stiles, ditches and drains, are kept in constant repair. Now, instead of this supineness and neglect, a manager of landed estates should be active to promote and encourage the improvement and advantage of the property committed to his care, as well as the comfort and convenience of the occupiers, by every possible means, such as being the first to intimate, introduce, and enforce improvements in regard to live-stock, to be attentive to the great and important object of irrigation, the rotation and consumption of crops, and the choice of proper implements of husbandry: he should at the same time be able to remove the shackles which antient practices and ignorant notions have in many instances rivetted on the minds of men; and then to recommend the best and most improved methods which may be employed in every county, and according to every soil and circumstance. He ought also to avail himself of the cheapest and most effectual methods of hol-

low, open, and mill draining. It is necessary likewise that he should understand how to apply water to the beneficial purpose of irrigation, either by taking it from natural levels, or raising it by machinery, from rivers, ponds and reservoirs. It will still further be requisite, that he be acquainted with the best and most improved implements of husbandry at any time in use, for the dispatch of business, and for the better cultivation of arable land, so as to keep it always clean and in good heart. If an agent suffers any part of an estate under his care to become either foul or exhausted, it is evident that he either does not understand, or is not inclined to execute, the duties of his office.

If all these matters were performed with judgment, the rents in this county would in a few years be very considerably increased: in some instances, perhaps from 20 to upwards of 100 per cent.

The advantage and good management of estates might be still further promoted by a liberal treatment of the tenants: by granting well advised leases, and by timely renewals; by allotting to each farm a sufficient number of cottages for the accommodation of a requisite proportion of labourers; by attaching to it a proper quantity of marsh land, to supply it with hay or pasture in every season, and by an equitable proportion of good and bad land, at least so far as local circumstances will permit.

The managers of large landed properties fill so important a station in society, by reason of the prosperity of agriculture, the interests of the landlords, that of the tenants, and the community, being all committed to their talents, integrity, and sedulous attention to the duties of their profession, that I hope it will not be deemed superfluous, that I have thus, though slightly, sketched what appears to me to be the most prominent features of an intelligent and active land-steward.

For more, see rotation of crops, leases, &c.

SECT. II.—TENURES.

THERE is much freehold, a considerable portion of copyhold, and some church, college, and corporation lands.

For more, see leases, and estates, their management, &c.

CHAPTER III.

BUILDINGS.

SECT. I.—HOUSES OF PROPRIETORS.

THIS county, from the circumstance of its containing the capital of the most considerable commercial nation in the universe, is distinguished by the number and magnificence of its buildings; the necessary consequence of a great influx of wealth, produced by the general industry and exertion of an enterprizing people.

Besides several royal palaces, the two houses of parliament, the courts of law, the several public offices, and a great number of hospitals, Middlesex has to boast of many most magnificent mansion-houses, belonging to the nobility and wealthy commoners, as well in the metropolis as in the country: and also of a very numerous list of elegant villas, and modern built houses of great value, the property of a most respectable class of men, viz. merchants, bankers, and the superior order of tradesmen.

To attempt a description of the noblemen's and gentlemen's palaces, mansion-houses, villas, parks, paddocks and pleasure grounds, would be sufficient to occupy several volumes; but as they have little reference to the direct purposes of agriculture, it will scarcely be expected of me to enter on that task in a work of the present kind.

I shall take this opportunity to remark, that if the nobility, gentry, and proprietors of landed estates in general, were to make a point of keeping a farm, consisting of arable, meadow and pasture land, in their own occupation,
and

and near their respective country residences, it would add considerably to their pleasure and amusement; and if conducted on the most improved principles, it would have the effect of teaching the neighbouring tenantry the best practices in the several branches of husbandry, by the most powerful of all means, namely, example.—These being dispersed pretty equally over the island, *every district might then be said to have its experimental farm*; not only affording considerable profit to the owners, but at the same time a very high degree of gratification to them, in being looked up to, by their tenants and neighbours, as models of perfect management, while they are further conferring blessings, and rendering the most substantial and permanent services to their country.

SECT. II.—FARM-HOUSES, OFFICES, AND REPAIRS.

THE oldest farm-houses and offices now in the county, are built with timber, lathed and plastered, and the roofs thatched; which sufficiently indicates, that at some distant period they were generally so. These buildings appear to have been erected by piece-meal, merely to suit the immediate and indispensable wants of the farmer. Of the houses, many are in villages; others in low sheltered situations; often on the side of a green lane; and frequently near a pond. In the arable part of the county, the offices have been added one after another, in proportion as the woods were cleared, cultivation extended, and the requisitions of the farmers increased. Being built with timber, they will endure repairing, even after every vestige of the original materials is perished and gone.

Those farm-houses that have been built within the present century, are generally erected with bricks; and, owing to the high price of straw, and the great value of manure, the roofs are now, for the most part, covered with tiles.

The modern and recently built farm-houses and offices are, with very few exceptions, well constructed, and are kept in pretty good repair. "Some of them are perfect models of their kind, particularly Sutton-court farm, in the parish of Chiswick, now in the possession of Mr. Thomas Ruberry;" and the farmery of John Robinson, Esq. (the surveyor-general of His Majesty's woods and forests) at Wick-green, in the parish of Isleworth. The latter indeed exceeds every thing of the kind I ever saw; and well deserves the inspection of gentlemen who, regardless of expence, may have it in contemplation to erect the most complete set of new and elegant offices for an *extensive farm*, and which is to be in their own occupancy. The bottom of this farm-yard appears to be well covered with chalk, and wants nothing to render it perfect, but to be annually covered with mould to the depth of about two feet, before cattle are admitted into it for the winter. Such a covering would absorb all the urine and dung-water, and become a rich mass of manure; which would be highly preferable to the present mode of rendering the yard dry by means of drains and grates.

The farm-houses are most of them placed with a proper attention to convenience and usefulness; though, in the arable part of the county, where the farms are in common fields, many of them are at a very inconvenient distance from the land. But this is the necessary consequence of the land being in common, and is one among many more reasons, why it should be inclosed.

Many hay-farmers have only a stable for their horses, and an open shed for loaded carts to stand under, in addition

tion to the dwelling-house and its offices. Others have a shed for a cow, and a barn (without a threshing floor) which they fill with hay, frequently the second crop. Some of these barns are fitted up with deal linings, partitions and floors, in a very complete manner for the purpose of suckling house-lambs; and the second crop of hay is either placed at one end of the barn, or adjacent to it, for the especial use of these lambs.

Many of the modern farm-houses, in the hay district of the county, have pretty much the appearance of gentlemen's houses, both in construction and neatness, principally owing to there being no farm-yards with cattle. And even in the arable part of the county, there are but few yards of this description, as the straw is almost all sent to market.

Thatch certainly keeps out both the summer's heat and winter's cold, much more effectually than any other material now in use for the purpose of covering houses and other buildings; but as it is not quite so compact and slightly as either slates or tiles, and withal, the straw being of so much value for other purposes, it will probably be entirely superseded by them. Pan-tiles are so easily heated through by the sun during the summer months, that the rooms underneath are as hot as an oven: while in the winter season, in every common frost, these tiles are so completely frozen through, as to become as cold as a covering of ice. These extremes must consequently have a very bad effect on the health of the inhabitants. The blue slates are so very thin, as to be equally liable to the same objection, particularly as they are now laid on most of our fashionable houses, under Wyatt's patent. They are rather better when laid on in the common manner (*i. e.* double) on laths, but much better on boards. *Plain tiles make a considerably more temperate covering for houses than*

than either pan-tiles or slates, by reason of their being laid double and in mortar, and thereby forming a much thicker and closer roof. In this they are nearly equalled by the thick or stone slating of the midland counties; they might also be glazed of a slate colour, in which case they would make a roof more handsome, temperate and durable, than any other covering material now known.

If it were necessary to have barn floors for the purpose of threshing on, a very good method of laying them may be found in the Derbyshire quarto Report, page 52. But two such floors will cost as much as a *threshing mill*, and at last the said floors but imperfectly answer the intended purpose, whereas the *mill* will not only be found to thresh the corn perfectly clean from the straw, but may also be so constructed as to be applied to many other useful and economical purposes.

SECT. III.—COTTAGES.

COTTAGERS who live on the borders of commons, woods and copses, are a real nuisance, from the circumstance of a considerable part of their support being acquired by pilfering. In such situations, most of the cottages are erected with the connivance of the lord of the manor; too often in conjunction with two or three copyholders, who are perhaps overseers of the poor. The erecting a cottage, and placing a poor family on the waste, and close to a wood, is a certain means of relieving the parish, at the expence of the proprietors of such property. This kind of grant, made in the front of other land, in the vicinity of London, or any increasing town, is a serious loss to the owners of such land, as much of its value

value depends on its fronting a road or a green, and also in not having an unsightly cottage close to it.

The habitations of most of the married labourers are built with brick, and tiled, and are situated in the towns and villages. Some of them have been erected with quartering, weatherboarded and tiled: two cottages under one roof, with very small gardens, each of them from three to four pounds a year. In Riselip, Pinner, and in some other places, there are several who have a more ordinary cottage, and the superior convenience of an orchard and garden, at about fifty shillings a year.

Cottages, and houses of every description, are usually considered as having a right attached to them, which entitles the occupier thereof to cut bushes, turf, heath, peat, and such like things, for fuel, on the commons within the manor in which they are situated, or of which they are held.

The meanest cottage may practically be considered as having as much common-right belonging to it, or rather perhaps, as exercising that right, to as great an extent as the largest mansion. The instances are very rare, in which more than one fire in an house is constantly supplied with such fuel; and this is more likely to happen in the cottager's tenement than in the gentleman's villa. The inhabitants of cottages also usually feed as many *geese and pigs** on the commons, as the occupiers of larger houses; and as these are held to be the only common-rights belonging to houses, it is evident there is no greater right of common attached to the higher rented

* The cottagers of England have, so long as geese have been known in this island, depastured them on the commons, which I hope is sufficient to give them as certain a right of common as the farmer has for his ox. The same observations apply as to swine that are secured against turning up the soil.—*J. M.*

house than to the cottage. So far as the houses only are concerned in practice, they may be considered as equal, and in fact, they have generally been so valued by commissioners employed in carrying into effect different acts of inclosure.

It is, I believe, a general rule adopted by such commissioners, to come to a resolution on the average annual net profit which the houses in the district have been accustomed to draw from the commons or wastes then under consideration, for the purposes of *fuel, and in feeding of poultry and hogs on them; and then, and from those circumstances, to allot to each house so much land as in their opinion will be a fair equivalent.*

In many instances, these house or cottage-rights have been valued at from twenty to forty shillings per annum each; and were it possible in all cases to set out a portion of land of like value, so as to adjoin their little dwellings, and for the inhabitants to have it *rent-free, as they previously had the common*, their condition would be greatly ameliorated. But as a method to accomplish this desirable purpose, and at the same time to render equal justice to the landlords, has not yet been hit upon, we find that the poor cottager has hitherto been obliged to pay rent for what, it might be said, he enjoyed for nothing while in a state of commonage. And yet it is with a chearful heart he pays such rent, when he can have in *severalty*, adjoining his own door, that which, being in *common*, was not perhaps of half the value; on the contrary, it is to be lamented that this small pittance of land is generally allotted with larger portions of the common, in satisfaction of other claims made by the same person, and all let together to a farmer, or occupied by the proprietor. In this too common case, the cottager is bereft of his former common-rights, without receiving any consideration

sideration whatever to console him under such a loss ; consequently, his situation is made so much worse than it was before, as the value of his former rights, namely, twenty or forty shillings a year. This is a melancholy picture ; but where shall we seek a remedy ? *It appears to me, that an effectual one can only be found in a law directing, that any allotment of land that shall be made in lieu of the common-right belonging to any cottage or tenement, shall be set a-part exclusively for the use of such cottage or tenement, as near to it as possible, and for ever afterwards occupied by the poor person who may dwell therein for the time being.* Although by such an arrangement, the cottager would become chargeable with a rent for the allotment, yet it would be found that the extra industry which would in consequence be exerted by *him*, and the greater supply of manure raised on this little farm (if it may be so called), would double the value of it, both to the landlord and to the community, in a few years, and his net profits would, as near as need be estimated for the present purpose, be as much as his privilege on the common had ever produced him. From this view of the case, we are presented with the pleasing prospect of the cottagers' situation being rendered even more happy and comfortable than before.

Further, the herbage of all land set a-part for public purposes, as gravel pits, and the sides of roads, &c. might be reserved for their sole use and benefit*.

* The following observation is copied from one of the returned Reports :—

" It has been proved in a variety of instances, beyond all possibility of doubt, that the exercise of the right of cutting fuel upon a common (such as turf, ling, &c.) is not half so beneficial to the poor as their constant labour being required in the cultivation of the same soil. A portion of the wages will purchase fuel of another description, such as coals or wood, at a much cheaper rate."—This may be true in particular cases, but it is not generally so.—*J. M.*

These

These things, if attended to, would preserve to the occupiers of cottages, most, or all, of their present advantages; and in addition to these advantages, would put them in possession of what, to a poor family, must be a very great comfort, *a spot of ground whereon to grow esculent roots for the supply of their tables, and perhaps, in some instances, the still greater advantage of being able to support a cow*.*

If some such scheme as the foregoing were pursued, on the meditated general inclosure of the waste land in this country, particularly the idea of annexing to each cottage a small piece of land for the purposes before-mentioned, it would, I conceive, not only tend to the principal, and avowed object of *ameliorating the condition of the humble but useful cottager, but also help to reduce the poor-rates, render the labourers more orderly, destroy the disposition to pilfering, which is now far too frequent, and more firmly attach them to their superiors, and their native soil † ||.*

* "Wherever the cottages have an acre or two of land, the benefit of it is felt by the cottagers themselves in the greatest degree, and by the occupiers of land in the lowness of the poor-rates, and in the industry and good order of that description of labourers. These small portions of land are generally well managed, and made the most of."—*Rutland Report.*

† Copy of a paper, drawn up from Lord Kenyon's observations on the common-right of cottages, made in the Court of King's-Bench, 11th Feb. 1795.

Lord Kenyon said the Court would not interfere more in the execution of inclosure bills, than to put the Commissioners in motion: they should be left to their own discretion. If the Court should once give way to applications of this kind, they might open two or three more Courts in the Hall, that would have nothing else to do. It was doubtful whether cottages had any common-rights at all: a cottage and garden could have none. It could not support a cow, nor any allowed commonable cattle, during the winter. Many of them might be encroachments from the waste, made with the connivance of the lord of the manor; and all such could have no common-rights, unless they had been so encroached and inclosed time immemorial. By the law of England, no estate was entitled to common-right for more cattle than were levant and couchant, or than could be wintered upon the old inclosure.

A cottage

A cottage with a rood of land, could scarcely be supposed able to support a cow; pigs it might have, but he doubted whether they were commonable cattle. Geese were not cattle; they were animals not commonable; hence he thought a cottage and garden could hardly have any common-right, except as to fuel, and that might be from sufferance, or connivance, and it must be time immemorial that could constitute a right.—*J. M.*

|| It is a notorious fact, that cottages not having any ground belonging to them, promote thieving to a great extent; as their inhabitants constantly rob the neighbouring farms and gardens of roots and pulse sufficient for their own consumption; and which they would have no temptation to do, if they had the same articles growing of their own. Hence this evil admits of an easy remedy, namely, allot to each cottager a piece of ground.—*J. M.*

CHAPTER IV.

MODE OF OCCUPATION.

SECT. I.—SIZE OF FARMS; CHARACTER OF
THE FARMERS AND RURAL ARTIFICERS.

SIZE of Farms.—The farms of this county are in general small, especially when compared with Sussex, Wilts, and other counties, where large downs or sheep-walks constitute a part of the farms. Mr. Willan's farm, at Mary-le-bonne-park, containing upwards of 500 acres, is probably the largest in this county; there are many of about 200 acres; but perhaps the average of the county would not exceed 100. Near great towns, small farms of good land are so much better suited to the purposes of a gardener than a husbandman (his art being more beneficial to the public, to his landlord, and to his family), that the gardener should in such situations have the preference.

A few acres of good loam are equally suitable for a nurseryman, and are sufficient for his purpose. But in more distant places, a farm of twenty, or even fifty acres of ordinary arable land, is much too small for the employment and support of a family, at the present high price of the necessaries of life. Farms which are under fifty acres, should, wherever the nature and quality of the soil will admit of it, be in grass. This would allow the renter of it to have a separate employment.

With respect to the long disputed subject of great and small farms, which has of late so much occupied the attention of every man at all concerned in rural pursuits, I conceive

conceive that, in order to accommodate every possible description of men, who, by inclination or otherwise, are disposed to become occupiers of land; and in order to suit every extent of capital, there ought to be farms of almost every size; provided that there be at the same time the most perfect cultivation of every acre of the soil.

Every man who has had opportunities of making extensive and accurate observations on the produce of land, must acknowledge, that it is rather the larger (not the largest, or those who occupy the most land, who too often let great part of it lie in a state little better than waste, as are most of the sheep-walks)—I say, it is rather the larger farmers and yeomen*, or men who occupy their own land, that mostly introduce improvements in the practice of agriculture, and that uniformly grow much greater crops of corn, and produce more beef and mutton per acre, than others of a smaller capital. Surely the landlords, but especially the community, are much interested in the encouragement of this description of men, who, by their superior skill and industry, and from the advantage of a sufficient capital, are able to obtain the greatest possible produce from the land, and at the same time, by a judicious management, to increase its value.

It is universally found, that farmers who occupy more land than is proportioned to the capital they have to employ in the cultivation of it, cannot possibly keep the arable part of their farms clean. It necessarily becomes filled with couch grass and other weeds, by means of which the produce is reduced in quantity to about half what it

* It should seem to be necessary to define every word, since on a very late occasion, a court of law referred to a jury for their verdict, to know whether a common soldier was a yeoman or not? they returned that he was: perhaps another jury may determine, that a man who occupies his own land is a common soldier.—*J. M.*

ought to be, and indeed what it *would* be, under the management of a man of larger capital. So also with respect to grass land: such persons cannot keep a sufficient number, nor a valuable sort of sheep and neat cattle, to stock it completely. From these circumstances it generally happens, that they remain poor, and unable to cultivate their land to the best advantage: and were all our farmers of this description, the community would be starved for want of the necessary supplies being brought to market. The best rule, so far as I can judge, appears to be, that no one should occupy more land than his property and talents will enable him to cultivate in the best manner, and to which he can give the necessary attention, so as that every part of his farm shall be applied to its proper use. No waste, sheep-downs, sheep-walks, or pasture, should *by any means be permitted for the mere purpose of feeding dung-carriers, or of filling the bellies of lean sheep, which are intended to empty themselves at night in the fold on the arable land, to the ruin of all the grass land so used.*

If any regulation, for the entire cultivation of all these downs and sheep-walks, that are fit for the purpose, could be obtained, it would soon circumscribe within proper bounds, the size of every overgrown farm, as they are, invariably, only so by reason of the great quantity of waste or down land attached to them. Such a regulation would, I believe, have the effect of removing the *cause* of complaint respecting large farms, and the consequent alledged default in the produce, from the plenty that would be produced thereby.

Doctor Anderson (in his Report of Aberdeenshire) has satisfactorily shewn, that farms of a full medium size have clearly the advantage, in the occupiers being able to carry on their ordinary operations with greater economy than on farms of a smaller extent; and in the following page he

he draws this just conclusion, that “ it is obvious that no
“ determinate size of farms can be invariably the best, but
“ must be regulated by circumstances.”

Character of the Farmers.—The farmers, or cultivators of the soil of this county, may be divided into various classes, or descriptions of persons.

In the vicinity of London, the ground is mostly rented by gardeners and nurserymen. The land lying immediately beyond the last, is occupied by the villas of wealthy citizens and others; and at a still further distance, by farmers, who are again divided, first, into persons with whom farming is but a secondary object (their primary occupation being generally in London), and who do not pay to it that attention which is necessary to make it profitable.

Secondly, into persons who, having acquired an easy fortune in other pursuits, retire to farming, with the idea of uniting profit and amusement in their agricultural labours. There are many of this class, who know nothing either of the theory or practice of agriculture; but having hastily imbibed a notion that it is a very pleasant pursuit, enter into it with great expence and precipitancy, and generally quit it again in two or three years, after having suffered considerable loss, from having laid out large sums of money for the most part in useful improvements, without waiting to receive a return for their labour and expence. They then quit their farms in disgust, and leave them for others to reap the fruits of their industry.

The third is a less numerous class, and consists likewise of persons “ who have been in a different line of business, yet have had such a strong inclination for rural
“ occupations, that they abandon their former employ-
“ ments altogether, and betake themselves wholly, and
“ without reserve, to farming of land, as a profession.

“ This class forms the most intelligent and most accurate
“ of husbandmen. Like converts in religion, they have
“ more zeal, give more application, in short, have fewer
“ prejudices to surmount, and more enthusiasm for their
“ new profession, than those who have been brought up
“ in it from their infancy. They are, however, at the
“ first outset, more liable to error or mistake, from the
“ want of practice; but their indefatigable attention makes
“ more than amends for their ignorance of the *minutiæ* of
“ the art; and as they have been at some pains to acquire
“ a knowledge in the theory of agriculture, and hence
“ established their ideas on rational principles, they most
“ commonly in the end make a distinguished appearance,
“ as their labours, if judiciously performed, though often
“ in a new and experimental channel, seldom fail of being
“ crowned with success. The number of cultivators of
“ this description, is, however, very limited.” Of this
class was one of the best farmers in the county, lately deceased, who had been a taylor.

The fourth and last class, is about equal in number to all the rest, and is composed of persons who are farmers by profession, and who have at no time been engaged in any other line of business: these, as a body of men, may justly be said to be industrious and respectable, and much more intelligent and enlightened than the generality of farmers in places more distant from the metropolis. But there are some exceptions to this general respectability, as may be seen in the following case. After the quitting of a yearly tenant who has greatly wasted the land he occupied, if the landlord should commence an action against him for such misconduct, it is usually referred to the arbitration of a barrister at law, who, having no skill in rural concerns, so as to form an opinion of his own on the merits of the case, proceeds strictly according to the evidence produced

produced by the contending parties. The landlord therefore cannot recover by means of this arbitrator, any thing from the *visible* deterioration and exhausted state of the land; but, on the contrary, is put into the difficult situation of being obliged to prove, by actual witnesses to the transaction, that the tenant carried off the dung, the crops, the timber, &c. also where the hedges have been destroyed, he must prove that there were hedges during the time of this tenant; and so on. This man may certainly have carried away many loads of each, or all, of these articles, but as the witnesses can only swear to one or two of them, the value of the one or two will be all he can recover. In the first instance, perhaps, one half of the articles will be lost, from the attorney's not having mentioned them in his declaration, and nine-tenths of the remainder, owing to the witnesses not being present at the time the depredations were committed. As to the other tenth part, the tenant meets his landlord on the merits of the question, and can and will in all such cases, bring forward a set of low, beggarly farmers, who are, though not apparently, interested in the decision of the cause, to swear that they have done the like, and that their landlords did not bring the matter before a court. This will be sufficient to induce the arbitrator to determine that it is the custom of the place so to do, and award in favour of the tenant. Perhaps, indeed, the landlord may be fortunate enough to prove a trifling article of waste, the value of which will be awarded to him; each party to pay his own costs. This is not an imaginary case, but one that actually occurred about twenty miles from London, in the year 1796; and although the landlord had, in the opinion of two or three persons of competent judgment, been plundered to the amount of three hundred pounds or upwards, and notwithstanding both himself and his son

were attornies, yet he received but five pounds, and had to pay his own costs, which, as between attorney and client, would amount to one hundred pounds.

If the general character of the Middlesex farmers were to be judged of by such instances as these, the picture would be disgusting in the extreme. But on the contrary, justice requires that I should state it as my firm opinion, that there are in every district of the county, men in this line of life, who practise as much integrity in their dealings as any other persons whatever.

I apprehend there is not a landed estate, of any considerable extent, in Great Britain, but what is occasionally depredated and despoiled in the manner here stated, which can only be attributed to defects in the law, the want of effective leases, timely renewals, and a more strict attention on the part of the proprietors.

In order to make good farmers, the roads should be kept in repair to their very doors, canals should be near, tithes should be abolished, the game-laws and hunting should be annihilated, well-drawn leases should be general; and above all, there should be a certain, good, and ready-money market for the produce of their farms, and within a reasonable distance.

Character of the Rural Artificers.—Manufactories appear to be the parents of ingenuity and excellence in mechanism; and wherever they abound, it is observable that a portion of that spirit generally infuses itself into the rural artificers of that district. The ordinary wheelwrights and smiths of Middlesex have no ideas of machinery, nor have they a capacity for executing any thing from drawings or specifications. The generality of the farmers' labourers are equally stupid, and unwilling to execute their work in any way to which they are not accustomed.

Hence,

Hence, the difficulty of introducing any thing new in the implements or practice of husbandry is almost insurmountable. Even the most trifling alteration, or deviation from the old system, is resisted, both by the artificers and labourers, and every possible obstruction thrown in the way of the farmer, to prevent what they deem an unjustifiable innovation on the established customs of the place. It is absolutely impossible to get a plough, a threshing mill, a winnowing machine, or indeed any other implement of husbandry, made on the best principles, by the country artificers of Middlesex; and it is not much less difficult to induce the labourers to use them when they are brought from any other parts. Thus the farmer is reduced to the disagreeable necessity of treading in the steps of his grandfather, though the practice may be, and in many points frequently is, at war with his own judgment and inclination.

It is true, we have a Bramah, a Winlaw, a Cook, and some others, the most ingenious and sensible among mechanics, residing too in this very county, and who are fully competent to execute any order for every kind of instrument that can be useful or necessary to the purposes of agriculture. Yet their labours are less valuable than at first might be supposed, by reason of the necessary and unavoidable wear and tear that every implement used in the business of farming must undergo, the impossibility of getting them thoroughly repaired by the country workmen, and the great expence and delay that would be occasioned by sending them for that purpose to the original makers.

Specious writers on agriculture, who have not themselves experienced these difficulties, are too ready to condemn the whole body of husbandmen, as obstinately resisting every improvement, when at the same time they are

not aware how much they subject *themselves* to the retort of being deemed superficial observers of the subject, in thus frequently bestowing unmerited censure.

SECT. II.—RENTS.

THE rent of land in this county, varies from ten shillings to ten pounds per acre; which great disproportion is here, as every where else, occasioned by a variety of circumstances: such as the natural quality and aspect of the soil; the distance from London and other markets; the goodness, situation, and convenience of the buildings; the state of the walls, hedges and ditches; the expence of conveying the produce to market, and of obtaining a supply of manure in return; and also, whether it is by land or water that the products are to be carried: the state of the roads; the expence of toll-gates, weighing engines, and markets.

Many other matters which repress and keep down the rent of land, are particularized in the subsequent pages of this book.

My opinion on the rent of land, is of so much consequence to myself, that it will not be expected of me to give it in this place. It must suffice, that instances are numerous, of its being sufficiently high, and that very great inequality prevails*.

Besides

* Mr. Foot says, "the average rent of land in the parishes of Heston, Bedfont, Stanwell, and many others in the neighbourhood of Hounslow-heath, does not exceed twenty shillings per acre. Even near London, some few who rent under old leases, do not pay above fifty shillings per acre. In the common fields near Fulham the rent is three pounds. Inclosed land pays four pounds. Garden-ground walled in, from five to eight pounds; and it is said, in the neighbourhood of Chelsea and Kensington,

Besides the rent, the tenant has tithes, taxes and assessments to pay, which vary even more than the rent, and amount from five shillings to twenty shillings in the pound; so that considering rent, tithes, taxes, the very great expence of the necessary supplies of manure, together with the high price and astonishing degree of labour required, it is obvious, that it must demand a great deal of attention, industry and skill, to derive a living profit by the cultivation of land so circumstanced.

The rents are, without exception, all paid in money; and that generally twice a year, namely, Lady-day and Michaelmas; with some few instances of supplying the landlord's family in town, with fresh butter at eight pence or nine pence per pound, and with cream at 6d. per pint.

The method practised by some gentlemen, of estimating the produce of land by trebling the rent, is very fallacious: three times the rent is not by any means equal to the value of the produce of the land under the best systems of husbandry now in use; though under the old exploded course of fallow, wheat, oats in the scanty produce of common fields, and when taxes, and the expences of living, were at one half of the present amount, it was not very distant from the truth. But under the more improved courses of husbandry on land at, and under, twenty shillings an acre, the produce is now more generally worth from five to seven times the rent.

The rental of the whole county is about four million and an half, whereof 2,900,000*l.* was assessed to the

"sington, even ten pounds; but the rent in that case is regulated by the
"quantity of walls and fruit trees thereon, and not by the bare value of the
"land †."

† There is much land within five miles of London, the rent of which does not exceed forty or fifty shillings per acre. Nursery ground and grass land contiguous to gentlemen's houses, let at five and six pounds per acre.—
Dr. Wilkinson.

county-

county-rate to raise 12,000*l.* during the last year: the rate is at about two-thirds of the value, therefore the unassessed is 1,450,000*l.* Cottages not assessed 35,000, at 4*l.* is 140,000*l.*; total, 4,490,000*l.*

SECT. III.—TITHES.

IN many parishes of this county, the tithes are taken in kind; and which is nearly the same, in others they are annually valued, and compounded for. In several parishes, a reasonable composition is taken; in some it has been very little advanced during the last twenty years; happily there are farms which pay a *modus*, and others that are entirely tithe-free.

I doubt not but that I shall stand excused for relating the following oppressive cases of tithes. It is in order to shew more clearly than I could otherwise do, that tithes operate against the improvement of the soil, and consequently against the interest of the nation:

I met with an instance near Longford, in this county, of a farmer having with great pains, and by an expensive culture, raised large crops. He offered a guinea* an acre as a composition for the tithe of his wheat; but it was refused, and was spitefully and maliciously taken in kind.

A late rector of Kensington, in this county, after having for some time harassed his parishioners in the court of Exchequer, obtained a decree that pine apples, &c. which are well known to be raised at the expence of hot-houses, and other considerable expences, should yield their tithe in kind. I have not heard how many hot-houses were pulled down on that occasion, but a very exorbitant composition

* Which was exactly the rent he paid per acre.—*J. M.*

was demanded and received from the inhabitants, in lieu of paying their tithes in kind.

Jonathan Tyers, Esq. was at the expence of making a hop-plantation at Denbys (Surrey). The vicar refused to compound on any reasonable terms, and insisted on taking the tithes in kind, and also of having them picked. A suit in the court of Exchequer was litigated, and the decree going against Mr. Tyers, he grubbed up his hops, sowed grass-seeds, and made a pasture of the land. Thus was a produce of upwards of thirty pounds an acre reduced to three.

The parish of Hutton, in Essex, was much occupied by the suckling of calves. The clergyman insisted on taking the tithes in kind. The inhabitants were willing to set out one-tenth of every meal's milk, and it was the only means they had of continuing the suckling business.

This, however, would not content the parson—no: he insisted on having *all* the milk of every *tenth day*, though he must know that it would ruin their suckling system. They of course resisted; the parties were several years at law, and at last an unreasonable composition was obtained from the farmers*.

The success of these, and like cases, stimulated a vicar of Battersea to draw the tithes of that parish in kind, which was continued for two or three years, during which time nothing was more common than to meet his carts in the streets, retailing his tithes, with a person in each, vociferating, "come buy my asparagus!—oh rare cauliflowers!" &c. &c.

A few instances equally oppressive with these, have happened in every county in England; and the necessary

* Tithes are not only oppressive in their own nature, but the method of taking vicarial tithes in kind, is ruinous to the occupier.—*J. M.*

consequence is, that they have severally put a stop to some expensive, but promising improvement. Every matter of this kind becomes a subject of general conversation among farmers, and of course prevents their making the like attempts. *In short, an act of parliament to prohibit the improvement of land by any considerable expenditure, would not more effectually do it than the tithe-laws*.*

Had tithes never been established, happy would it have been for this country, and still more so for the clergy. They are a powerful cause of many quitting the church, and of creating and supporting sectaries: they are the never-ending source of ill-will, quarrelling, and litigation, and are, unquestionably, one great cause of the continuance of so much common and uncultivated land in these kingdoms. Within the narrow limits of my own knowledge, several premeditated bills of inclosure have been given up, rather than the land should be subjected to yield tithes in kind, after the great expence of the act, the commission, the survey, the making of new roads, the building of bridges, the fencing, and erecting new buildings, and cultivating the land, should be incurred.

A meeting was lately held, for the purpose of considering an application to parliament for inclosing the commons above Pinner, in this county. It did not suit the rector to attend the meeting; he therefore sent his proposal in a letter, which was, that a particular part of the commons, containing 300 acres, should be allotted to him in one piece, inclosed with a ditch, bank and park paling, and maintained in good repair for ever, at the expence of the other persons who had a right of common. As such an *unreasonable* request could not be complied with, it

* The practical Mr. Boys, in his excellent Report of the county of Kent, says, "nothing can be devised, that would so much set improvements afloat, as a commutation for tithe."—*J. M.*

of course defeated the intended application, and the land still continues in common.

For about 794 years after Christ, tithe had no establishment in this island; and *then*, only over a small part of it, till about the year 854, when they were extended to the rest of England. The occasion* of their being given, is a powerful reason against their continuance. It was at a time too, of great superstition and very gross ignorance; and tithes are continued to these days, by a barbarous policy which sets an insurmountable obstruction in the way of every great improvement, and lays an intolerable burden on the most virtuous and valuable class in society, to which half the property in these kingdoms contributes nothing. The operation of this tax is, to keep down or reduce the produce of the earth to much less in quantity than it would otherwise be, and of course to increase the price, and promote our dependance for bread on the importation of corn from foreign countries, which could with ease be raised at home.

Tithes create grievous heart-burnings on account of their *partial* operation, and which is visible in most parts of this county, by a very great number of the most wealthy persons living in expensive houses, or carrying on the largest manufactories, and who pay to the clergyman nothing, or at the most, only a few shillings a year, as a composition in lieu of the tithe of a garden. But mark the reverse. The smaller farmers are a very numerous class in society, supporting their families by the utmost exertion of their industry: many of them are unable to keep the wolf from the door, although themselves, their wives and children, would think it an indulgence, could they afford to fill their stomachs with the coarsest

* For the occasion of their being taken from the laity of this realm, and given to the clergy, see Burn's Ecclesiastical Law: title, tithes.

fare. Yet will the tithe-laws not fail to compel such miserable, but valuable beings, to pay a sixth, a fifth, or even a fourth, of the rental value of their land; and in some cases, more than the rent. Thus the poor farmer pays to the clergyman from 10*l.* to upwards of 100*l.* a year, while his wealthy neighbour does not pay so many shillings*.

Every possible argument in favour of tithes upon land, in exclusion of houses and other property, is insupportable. Why tax the land to build churches? Does the land go to them? Is it benefited by them? There is not, nor can there be, any connexion whatever between the land and the church. Religion, in a word, is a mere *personal* concern, and of course, every possible expence relative to it, ought to be defrayed by a *personal* tax, without reference to any particular species of property. A greater absurdity can hardly be found, than to tax land, houses, money, stock in trade, merchandize, shipping, &c. for the support of the church. Land has certainly no more analogy than shipping, to the church, yet no one ever thought of taxing shipping for the support of it. Neither, I repeat, ought land to be assessable for that purpose.

* Several additional cases of oppression may be seen in the *Annals of Agriculture*, vol. xxi. p. 438, &c.

SECT. IV.—POOR, AND THE RATES FOR THEIR RELIEF.

THE rates are from 6d. to 7s.—perhaps 3s. 6d. would average the county*.

The following is an abstract from the overseers' returns to parliament, for this county; extracted from a printed report of a committee of the House of Commons, dated 23d May, 1787.

MONEY RAISED BY ASSESSMENTS.

		£.	s.	d.
" For the year 1783,	- -	207,953	16	5
" For the year 1784,	- -	211,819	9	8
" For the year 1785,	- -	212,964	14	11
" Medium of those three years,		210,901	9	4

EXPENCES NOT APPLICABLE TO THE POOR.

" Medium of money applied for county				
" purposes, including vagrants, militia, constables' expences, prosecution of felons, county bridges, gaols,				
" houses of correction, &c.		8,746	18	3
" Medium of expences for repairing				
" churches, roads, clocks, stocks,				
" pounds, salaries to ministers, parish-clerks, sextons, watchmen, &c.		6,639	0	1
" Medium of net money annually paid				
" for the poor,		195,526	11	2

* The poor-rates at Enfield are about 2s. in the pound,—*Dr. Wilkinson.*

" Net

	£.	s.	d.
" Net expences for the poor in 1776,	174,253	1	3
" taken from the returns then made to			
" parliament,			

HEADS OF PARTICULAR EXPENCES.

" Medium expences of overseers, in	1,436	15	6
" journeys and attendances on magis-			
" trates, &c.			
" Medium expences of entertainments	1,695	6	3
" at meetings relative to the poor,			
" Medium expences of law business,	5,129	7	7
" orders, examinations, and other pro-			
" ceedings relative to the poor,			
" Medium of money expended in set-	1,380	7	8
" ting the poor to work,			

OBSERVATIONS.

Agriculture occasions very few poor; on the contrary, it provides them almost constant labour. It is only the blind, the extreme old, the very young children, and idiots, which become chargeable in a parish purely agricultural.

A labourer in agriculture, is more likely to support his family without assistance from the parish, at twelve shillings a week, than is a journeyman in any large manufactory, though his earnings should be a guinea, or a guinea and an half.*.

* In the parish of Merton, in which is my country residence, we have several large manufactories of calicoes, and, as a necessary consequence, many pattern-drawers, &c. whose earnings are from one guinea to one guinea and a half per week; but these are never assessed to the poor-rates; the fear of their families becoming chargeable to the parish, prevails over the vestry so much, as always to prevent persons of that description from being rated.—*J. M.*

Large manufactories, like crowded work-houses, destroy every virtuous principle. Such situations are the very sinks of vice; the old and the young, the healthy, and those afflicted with loathsome diseases, the necessitous and the abandoned, are all mixed in one house, or perhaps in one room. Here the young, the unfortunate, and persons of weak yet honest minds, every minute have their ears assailed with infamous oaths, and descriptions of every species of vice, deception, and theft. The scene is in the highest degree horrid, and infinitely surpasses any powers of description.

The idea of supporting a large family at a less expence per head than a small one, has led us into sad extremes. The supporters of such a system, neglected to estimate the effect of that general contamination of morals which always takes place, in situations crowded with paupers of every description; as well as the impossibility of preventing frauds, and of effecting the most prudent management, in large work-houses, or houses of industry, such, in short, as in the end to have the effect of more than doubling the expence; and which is calculated to be perpetually increasing, in something like the proportion of compound interest.

The difference in favour of small, or thinly inhabited parishes, when put in comparison with such as are large and populous, as to the expence and orderly behaviour of their poor, is astonishingly great. Hence the latter should divide and subdivide their poor, in order to put them on the advantageous terms of the former.

All the really necessitous, and who only want a part of their support, should be assisted in their own houses, where five shillings will frequently go as far as twenty would do in the work-house*.

The

* " It is much more wise and benevolent to succour the distresses, and
E " aid

The Rev. John Howlett, speaking of the means used for lowering the poor-rates in his parish of Dunmow, attributes it to two causes: first, a determination in the parish officers to spare their money to the utmost; and, secondly, by admitting as few as possible into the work-house, where experience had taught them, that the maintenance of the poor is much more expensive than out of it. The consequence was a very large decrease in the rates.

For distressed objects, who of necessity must have the whole of their support from the parish, there should be a sufficient number of small cottages built, in lieu of a work-house, not all close together, but perhaps in pairs, or at least so much a-part, as to admit of each cottage having a piece of ground, for the production of potatoes, turnips, &c. If widely dispersed over several parts of the same parish, so much the better; they should be made to hold two persons, and one or two children, or in lieu of the children, one or two of those paupers who should be found the most infirm. They should be obliged to assist each other, and to do something towards their own support. Alms-houses are a case in point, where poor persons live, on an average, for half the expence that supports others in a work-house, which incontrovertibly shews the more cheap and superior comforts which cottages afford over work-houses, and likewise the wisdom of erecting them in lieu of work-houses, for the reception of the poor*.

"aid the industry of the poor, in their own dwellings, than to crowd them together in work-houses."—*Sir William Young, Bart. on the subject of work-houses.*

* "In the year 1783, some alms-houses were built on the Uxbridge road, for the residence of poor families, with a sum of money given to the parish, as a compensation for the inclosure of a piece of waste. This seems a very proper application of the money, and deserving of imitation."—*Lyson's Environs.*

They

They who are able to work, but who are idle and incorrigible, should be let out to persons who are in the habits of employing and supporting such characters: there are several such in and near London; or they might be committed to the house of correction.

There are paupers in every parish within this county, who might be employed in scraping the turnpike roads and highways. The overseers should undertake the work by contract, which would be a benefit to the parish, and a convenience to the public.

Institutions for the relief of the poor of this county, are proportionate to the wealth of its inhabitants. Work-houses, alms-houses *, and weekly donations in bread, are provided in almost every parish, for the constant support of the indigent: and the money raised by voluntary contributions, for particularly unprovided cases of distress, amounts, one year with another, to a very large sum, probably in this instance to more than all the rest of Britain.

The funds raised for supporting the idle poor of this county are so numerous, efficient and comfortable, as to operate against the general industry of the labouring poor.

Lodging and diet in the work-houses, in every instance, are superior to what the industrious labourer can provide for his family. It is obvious that this must have an influence over their minds, and become most injurious to the interests of society. It holds out encouragement to prefer the work-house to labour; and, by filling the poor-houses with improper inhabitants, it reduces the amount of industry.

In those parishes with which I am acquainted, the annual expence of each pauper is about fifteen guineas; a

* To these might be added, a very long list of hospitals, infirmaries, asylums, dispensaries, &c. &c.—*J. M.*

stout healthy labourer in husbandry, with a wife and three children, earns only thirty for the support of five persons.

The earnings of the inhabitants of work-houses, on an average of the whole of this county, does not amount to eight shillings per head per annum; which taken from the former sum, leaves fifteen pounds seven shillings, or near six shillings a week, as the expence of supporting each pauper. This is a profuse expenditure of parish money, as two-thirds of the whole number of persons would support themselves out of the house, on being allowed only two shillings a week each*. Nor ought they in any case to be allowed so much as one-fifth of the earnings of a labourer, otherwise their situation is made as good, or better than his.

The want of prudence is increased, and general industry lessened, on the part of the poor, by the facility with which voluntary contributions are raised during every temporary inconvenience; such as a few weeks frost, or an extraordinary advance in the price of provisions. And also by the constantly clothing upwards of ten thousand children of the labouring poor in this county.

Among the numerous establishments in the county, charity schools certainly make a very distinguished figure. And I think that the great number of children which are now educated by means of the voluntary subscriptions and benefactions of the well-disposed, shews very clearly, that a law for the purpose of raising an annual fund, in order that every child should be taught to read and write, would be well received, and chearfully acquiesced in. The present method of clothing, as well as educating, the children placed in these schools, more than doubles the expence

* If it be true, that two-thirds of the number can be supported for two shillings a week, in their own houses, the whole might, in that case, be maintained for half the expence incurred under the present system.—J. M.

per head, and therefore necessarily restricts the benefits of education to less than half the number that it might otherwise be extended to, with the same funds. This system has also another bad effect attending it, as it, in many instances, induces a false dependance in the parent, and either makes him relax in his exertions of industry, or increases his means of frequenting the public-houses. It may be further observed, that the nearly general adoption of Sunday schools, points out the sense that people, for the most part, entertain of the necessity of some such measure as is here recommended,

Every institution which tends to make the poor depend on any other support than their own industry, does them great disservice, and is highly injurious to society, by diminishing the quantity of labour which annually produces consumable goods, the only wealth of a nation*.

The number of the poor is increased in a great variety of ways. I shall only mention a few of them; namely, 115,000 sharpers and thieves† committing depredations in and near London, must be ruinous to many, by contaminating the minds of some, and reducing the properties of others. The extravagance of the poorer clergy, placemen, pensioners, clerks in public and private offices, and others, is great. Their income generally depends on their health and faculties, and they frequently expend the whole of it. Of course, when such men die, many of their families are reduced to want. Not less than 1500 persons are annually left a prey to poverty in this manner. The enormous expence in money, and the equally expensive waste of time, in endeavouring to obtain justice by the

* Even "living on the borders of a common, induces a false dependance, "increases their misery, and renders them more burdensome."—Mr. East, who lives on the side of Hounslow-heath, and has long observed the effects of that common on the habits of the poor, made the foregoing sensible observation.—*J. M.*

† Colquhoun's Police.

laws of England, is also the ruin of about two hundred families, or of one thousand inhabitants, every year; while many are reduced from the class immediately above poverty, by the excessive multiplying of taxes and assessments. I have known two families, consisting together of thirteen persons, brought to the work-house, and maintained by the parish at an expence of two hundred pounds a year, owing to an imprudent collector of taxes having distrained about twenty shillings on each family.

But a still greater number of poor arises from various classes just above want, who are able to support themselves so long as their several concerns go on with success. The least reverse is ruinous; a bad debt of a few pounds, a law-suit, the long sickness or death of the man or his wife, pressing for sailors, kidnapping for soldiers, and a thousand other causes, are the ruin of numbers.

Every war* is ruinous to thousands in an hundred different ways. The present war, for instance, had not existed six months, before it had ruined many inhabitants of this island. I shall not dwell on this unpleasant part of my task any longer than to observe, that it would be surprising if the number and expence of the poor did not increase, while these things are permitted, and under such disastrous circumstances. Every tenth or fifteenth house is licensed to promote idleness, and all the bad consequences of drunkenness. Fifty thousand women †

* The high price of provisions makes few or no poor. It is a question with me, by no means decided, whether the high price of wheat has really made one within the last thirty years. The average price of wheat was high in the years 1773, 4, and 5; but they were years of peace, when productive industry was at the highest, consequently the expence of the poor was low. In the years 1783, 4, and 5, immediately after the American war, though the price of wheat was much lower than at the former period, the expence of the poor increased a fourth part; which arose from the war having added fifty thousand distressed objects to the former number of persons supported by the parishes. A similar, but greater increase of misery, will be one of the consequences of the present war.—*J. M.*

† Colquhoun's Police.

are suffered to live in and near London by public prostitution; dogs are licensed, many of which only serve to hunt the flesh off the flocks of sheep; while horsemen break the farmer's gates, and gallop down his growing crops of wheat. Gunners † destroy his hedges, and let the cattle go astray, to the loss of stock, to the great damage of particular soils and crops, and the unnecessarily increasing the farmer's labour. The industry, care and attention, of the middling and lower classes, generally made with the praise-worthy motive of bettering their condition, are insufficient to bear them up against such a combination of evils; which necessarily have a tendency to depress them into classes much lower than they would otherwise hold in society, and finally, into poverty and distress.

For further observations, see labourers, dogs, and public-houses.

SECT. V.—LEASES.

It is, without doubt, a most unreasonable prejudice which many proprietors entertain against granting leases of their estates; for the with-holding them certainly operates as a powerful bar against every improvement, and is as injurious to the interests of the landlord as to those of the tenant and the community. For the same reason, it is perhaps equally bad policy to restrain the tenant from selling or assigning his lease.

If the proprietors of landed estates could be prevailed on to grant leases (even long leases) of their farms, they

† I have known a gunner, with threatening expressions, level his piece at a farmer, for only cautioning him not to break the hedges, even while the harvest was in the field.—*J. M.*

would, by means of the improvements the granting such leases is sure to effect, considerably increase the produce, and consequently the rental, of Great Britain. It would also better the condition of the farmers; more, perhaps, than any other single means that can possibly be devised. Leases are calculated to rouse the utmost spirit, vigour, and energy, of industrious farmers, by means of the confidence they feel, that they shall certainly reap the profit of their labour, skill and capital, in consequence of their having a permanent, and not (as is too generally the case) a precarious interest in the soil they cultivate. Leases, in short, may very properly be said to be the only means for effectually securing both the landlord and tenant against the possibility of injuring or distressing each other.

It is well known, that the many valuable and extensive improvements which have been made upon the estates in and about London, and many other great towns, have been effected in consequence of building leases, from sixty to one hundred years, being granted to individuals undertaking such improvements. This has operated as a sufficient inducement for carrying into effect many very considerable schemes of advantage, which could not otherwise have been perfected. It plainly points out to the landholders in the country, the policy of pursuing the same line of conduct, and the propriety of encouraging a spirit of speculative improvement among the occupiers of their estates; by making it known to them that they are ready to grant leases of their farms for any number of years (perhaps not exceeding one hundred), only proportioning the length of the term, and the rent, to the nature and extent of the improvements which the taker may purpose, or be required to make; estimating that the lessee should be repaid his principal, and at least six per cent. interest, within the term. I have no doubt that if this measure

were

were adopted by the *proprietors* of landed estates, in every part of Britain, it would not fail to excite and encourage, among the *occupiers*, throughout the country, a spirit of emulation proportionate to that which has, of late, been so conspicuous in the metropolis.

In order more fully to evince the justice and propriety of granting leases, I shall instance three or four circumstances under which, it appears to me, that it would be highly proper, and very much to the interest of the landlord, to grant them from twenty to even one hundred years.

1st, In the case of a farm having been exhausted by the avarice or knavery of an out-going tenant, who has taken advantage of the neglect of his landlord, or the mismanagement of his steward; it being required of the person coming into possession to restore the land, by a proper, spirited and improved course of husbandry, and to deliver the farm up, at the end of the term, in a high state of cultivation; supposing him to pay a fair rent for such a farm: in such a case, I say, he ought to have at least a twenty years lease of it.

2dly, If, in addition to these expences, he should undertake to inclose and cultivate a quantity of waste land; or engage to convert suitable parts of the farm into water meadows; in this case, the lease ought in justice to be extended to thirty years.

3dly, Should any person undertake to drain completely an extensive bog, morass, lake, or large piece of stagnant water, he ought to have of such recovered ground, a lease from sixty to eighty, or one hundred years.

And 4thly, In the case of a tenant's building farm-houses, barns, mills, &c. or of his gaining land from the sea, it would be right and proper to grant him a lease from sixty to one hundred years: in every case, proportioning the
term

term to the different circumstances, the expence, difficulty, and ingenuity, of the undertaking.

I must further observe, that it will sometimes happen, that in fairness, the rent ought to be much lower during the first two, three, or four years of the term, than afterwards ; as the cause which occasions the propriety of the rent being set low at first, will probably, by due skill and industry, be removed in a few years : for instance, when farms are unfavourably circumstanced, as in the first and second class before mentioned, the rent should rise progressively ; suppose the first year at one-fourth ; the second year at one-half ; the third year at three-fourths ; and for the remainder of the lease, at the whole of the intended rent. Again, with respect to the third class, the tenant should not be required to pay more for the first three or four years of the lease, than the original value of such ground, in its unimproved state : and for a few years more, the rent may rise progressively, and in proportion to the advancement of the projected improvements, until they may be completed,—when the ultimate rent, previously agreed on between the parties, may become payable without inconvenience to the tenant. And let it be remembered, that the amount of such rent should be so moderate as to be a sufficient inducement for persons to undertake such improvements.

On the most mature consideration of the subject, I am decidedly of opinion, that the *community* at least, would in every instance derive much advantage from the proprietors of farms granting rather long * leases, as they are certainly
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* Hefleton farm, about four miles west from Wareham, in Dorsetshire, was lett (most likely at a very advanced rent, though I have not discovered what the previous rent had been, nor the state of the upper land), on lease for sixty years, at 140*l.* per annum. The lessee, encouraged by so long an interest in the estate, converted one hundred and forty acres of low boggy ground,

the most effectual means that can be used to promote any very considerable improvements in agriculture. Indeed there are few cases in which it would not be for the *individual* interest of the proprietors themselves to grant leases of their estates, except where the property may be intended for immediate sale, or perhaps as to a small portion of the estate in the vicinity of the mansion-house, and which, it is probable, may be wanted at some future period, to attach to the lands in hand. Except as to these particular circumstances, I can see no reason whatever, that should prevent the landlord of a farm from granting a proper, or, in other words, and as I have before observed, a rather long lease of it.

The letting of farms to tenants at will (*or from year to year*) is a most unwise practice, and should by all means be avoided by the proprietors of estates. *Such tenants, from the very nature of their tenure, are precluded from the possibility of making any improvements; but they generally have it in their power to ruin the land they occupy.* For instance; suppose (as in the south of England), the term should commence at Michaelmas: the tenant must crop the land in such a manner, that

ground, adjoining the river Froome, into water meadow, which has been flooded at pleasure for about fifty years of the time; he also permanently improved other parts of the farm so much, that on the expiration of the said lease, which happens to be at or near this time, the farm is thought to be worth five or six hundred pounds per annum.

Another instance also occurs to my recollection, which happened about seven years ago, on the letting a twenty-one years lease, of the manor farm at Longney, in Gloucestershire. On that occasion, the tenant discovered the means of regularly flooding, from the river Severn, a large and very coarse meadow, which meadow would certainly have remained in its native poverty and ill condition, had not the said lease been granted.

I could also produce some instances of land being now lett at two shillings and six-pence per acre, that would have been worth twenty shillings during the last twenty years, had the owners granted it on lease, even for so short a term as twelve years.—*J. M.*

the

the whole can be reaped within the year; and as he will have no right after Michaelmas, to thresh his corn and consume his hay and straw, he rightfully, and of necessity, carries the crops off the premises. This he may do year after year, (for every year, with such a tenant, is a fresh agreement) until the land is nearly ruined. He may then quit the farm, and leave it for the landlord either to restore it to its former condition, or lett it for half its former rent. Besides, it cannot in reason be expected, that a tenant who is liable to be turned out of his farm at six months notice, will incur any expence above what may be deemed indispensibly necessary*.

It should also be considered, that the putting an ill-conditioned farm into a high state of cultivation, cannot be done at once. Several years are required to carry into effect the best digested plan: it is also attended with a much greater expence, and requires more skill and sedulous attention, than most people are aware of; a great deal more than any farmer *ought* to attempt, and indeed more than any sensible man *will* attempt, without the security of a lease†.

* For the danger of yearly tenants, see character of farmers, page 52.

† Rapacious landlords, unskilful stewards, and yearly tenantry, destroy the tenant's confidence, smother his thoughts of improvement, and, in short, make a bad tenant, by setting him to contrive some mode of occupying the land, so as to be able to quit it on receiving half a year's notice, with the least possible loss to himself: and which can only be done, by keeping the soil continually poor, to the evident loss of the landlord, no less so of the tenant, but the still greater loss to the community.

The immense quantity of ley land in a state the most exhausted and poor in England, has been so reduced from a respectable degree of fertility, by the occupiers of the soil being permitted to follow their own system; and every farm, if not every acre of land, in the nation, would be brought to a similar wretched condition in less than twenty years, if the renters were allowed to crop it each man after his own manner. Every week's experience gives me additional proof of the truth and justness of this remark.—J. M.

Having

Having said thus much, in endeavouring to prove to the proprietors of landed estates the policy of granting leases, I shall now offer a few remarks on the insufficiency of some, and the absurdity of many more, of the leases which are now in use.

The leases of farms now in use, are generally a composition of obsolete, unmeaning, or unintelligible covenants, which tend not only to shackle the tenant, but constantly operate in a powerful manner against the interests of the landlord, which they particularly profess to secure; and the community unquestionably receives through, and by the means of such leases, an incalculable loss.

Landlords are, in general, induced to grant a twenty-one years lease of their farms, in the expectation that it will be the means of such farms being brought into a proper and compleat state of cultivation. It is usually left to a gentleman of the law to make the lease, who does not, nor indeed can he, from the nature of his education and practice, be expected to possess a sufficient knowledge of rural concerns, to arrange the covenants and conditions of the lease, so as that the farm shall be delivered up at the end of the term in a proper state, or, as it is usually called, in *good heart*. On the contrary, if the tenant possesses capital, spirit and skill, he restores the buildings and hedges, drains, cleanses, and manures the land. By that and other means, he gets it into a high state of cultivation within the first seven years of his lease, and keeps it so till within the last five; he then exhausts the land as much as possible, by repeated corn crops, and by the neglect of cleansing it, and, with the land in this foul and impoverished state, treats with his landlord for a new lease, or quits the farm.

From this circumstance, in-coming tenants are not unfrequently nearly ruined, in bringing their farms into good order. In every part of this county, the crops sown by
any

any individual, depend in a great measure, if not entirely, upon the number of years unexpired of his lease; and it is not uncommon for a lease that has four or five years to run, to sell for as many years rents, on the presumption of what the buyer can draw from the land by deterioration and depredation. This is also the routine of farms in Surrey, and many other parts, and is only to be attributed to the vague and undefined manner of drawing the leases of such farms, and which, no doubt, has in some measure strengthened the dislike that many proprietors had already imbibed against granting leases.

The leases of a very considerable proportion of the arable farms in England, have a covenant inserted in them, requiring the tenants to follow a three years course of, first, fallow; second, wheat; third, oats; and to spread a specific quantity of lime every third, or in the fallow year, without any regard being had to the nature and quality of the soil, and to other circumstances. Under this restriction, only two miserable crops are obtained in three years. This is a very old course, and to be met with in various parts of England. It probably originated in common field husbandry, but it is a remnant of gothic barbarism, and the sooner it is got rid of, the better, for it not only ruins the land, but at the same time impoverishes the tenant. This covenant, however, having unfortunately found its way into most or all of our *attornies'* precedents, it still continues, in strict conformity with those gentlemen's prejudice for precedent, to occupy a place in all leases drawn by *them*, though the absurdity, in an agricultural point of view, is so very glaring. I have heard many sensible husbandmen in various parts of the kingdom, speak of this with lamentation, and at the same time declare, that they durst not vary this rotation by the production of green crops, or by introducing any better
system

system of management, as it would infallibly induce the steward of the estate to give them notice to quit their farms.

From this, and many other instances of the like kind, which I have met with in the course of an extensive business, I am induced to think that one of the many obstacles to perfection in agriculture, arises from the total incapacity of the stewards of many landed estates *, who certainly have it in their power, by encouragement and support, to introduce most kind of improvements, or by neglect and mismanagement, to perpetuate the most absurd and ignorant practices. The difference to the landlord may be reckoned at 50 per cent. ; to the tenant at more, and to the community at upwards of 100 per cent.

I have not any doubt, but that it is in a great measure owing to this want of skill and information in the managers of many estates, that the most improved methods of husbandry, and the most valuable breeds of live stock, are still confined to two or three corners of the island †, while all the rest are still labouring under the grossest ignorance with respect to this valuable science. Such men may possibly be fit to collect the rents of the estate, by much the least important branch of their duty, but they are not sufficiently acquainted with agricultural concerns, to arrange and

* This censure will not, I hope, be supposed to apply to *land stewards* in general, many of whom have not only given sufficient proof of their competency to, and fitness for, such a situation, but have also been the first to countenance and promote improvements upon the several estates under their management. But landed estates are not unfrequently under the superintendence of gentlemen of the law, some favourite servant, or other person without experience in agriculture, and of course totally unfit for such an employment.—*J. M.*

† Namely, the south east, and south west corners, a part of Leicester, and on the borders of the Tweed, where there are estates under the direction of agents, who, by their skill and ability in their profession, have added cent. per cent. to the value of them ; and have even rendered some districts particularly famous for superior excellence in agriculture.—*J. M.*

dispose lands into the most suitable and convenient farms, and to point out and describe the very best mode of cultivating every acre of such farms.

It is really astonishing that gentlemen of landed property should pay so little attention to their interests and concerns, as to permit their stewards to wink at, or pass over, a tenant's ploughing up the richest grass land of his farm, and take ten, fifteen, or perhaps twenty corn crops in succession (as is stated in the Wilts, Somerset, Anglesea, and many other Reports), when it is perfectly well known, that the richest soils may be, and indeed very frequently have been, so exhausted, as to be rendered incapable of producing a tolerable crop of any kind, by rapacious tenants holding their farms as tenants at will, or, which is as bad, or perhaps worse, under improper leases. Every county in England and Wales abounds with instances of this kind; *to remedy which, the tenant should be restrained, and that under the severest penalty that it were possible to devise and enforce obedience to, during the whole term of his lease, from breaking up the prime pastures, or any of the meadow land, without the actual consent of his landlord.*

Church and college leases, and leases for lives, are, I think, generally drawn up in a worse manner than any other, at least than any that have come under my observation. The security of the landlords of this sort of property, principally, and almost entirely, consists in having excited a confidence in their tenants by means of the periodical renewal of their leases. But in all those numerous cases, where the owners have, from the powerful impulse of self-interest, come to a determination not to permit an extension of their leases, by the addition of other lives as the old ones become extinct, the insecurity and miserable effects of such ill-drawn leases are severely felt

felt by the lord of the manor, at the expiration of them, in every species of dilapidation: the timber is usually mutilated or destroyed, the arable land rendered foul and exhausted, by a too constant repetition of corn crops, the buildings deteriorated, or perhaps suffered to fall into ruins*, the hedges neglected or destroyed, the ditches filled up, and the grass land poached into sterile mortar. These, and such like cases, strongly point out the total incapacity of the persons who draw such leases, and also the absolute necessity of a thorough reformation as to the leases of landed estates in general.

In order, that the lease or agreement for a farm should be drawn with judgment and propriety, it appears to be indispensibly necessary, that a land valuer, or other person of competent knowledge in these matters, should examine both the surface soil and the substrata, the drainage, and different aspects of the several fields, attending at the same time to the distance of the neighbouring markets, the state of the roads, and other local circumstances that will naturally present themselves to men of understanding and experience. He might then determine the rent, and, after arranging his ideas for the best and most perfect management of the whole farm, draw up a few specific and determinate covenants, such as, under all the circumstances of the case, would be well calculated to secure the interest of the landlord, and at the same time promote the success of the tenant.

As it is not to be expected that much improvement will take place during the last seven years, under any lease, not even under the best drawn lease, the farmer will, very naturally, grow rather sparing of his manure, his clean cultivation, and generally good management, towards

* See this statement confirmed in the Norfolk, Berks, and Dorset Reports.—*J. M.*

the end of his term: it will not shew itself to so much advantage in the last year, as it probably may have done five years anterior to that period: for this reason, it is not advisable to delay the renewal till the last year, but rather to make it five or six years before the expiration of the lease, at which time every part of the farm will be more highly conditioned, and consequently lett for more money than when it is, by a relaxation in the exertions of the tenant, become more exhausted. The mind of the tenant would also be made easy, by being thus either secured in the continuance of his farm, or knowing that he is to quit it*.

Leases appear to me to be of so much importance, as being perhaps the most powerful and rational means of promoting improvements in agriculture, that I hope I shall stand excused for having entered so fully on this branch of the Report.

SECT. VI.—EXPENCE AND PROFIT.

THE *Expences* of entering on a farm, are much greater in the counties near the metropolis than in more distant places. This is principally occasioned by the ingenuity of the referees who make the appraisement which then takes place between the out-going and the in-coming tenant. This includes every thing in which the way-going tenant is supposed to have any interest, from the growing crops, downwards to the dressings and half dressings, the live stock, poultry in the yards, fish in the ponds, the fallows, dunghills and mixens, the implements serviceable and unserviceable, the heads of pollards, the side branches of trees, and the live bushes in the hedge-rows. These, and a hundred other articles, are enu-

* Vide, a most excellent paper on exhausting crops, and ill-drawn leases, in the Appendix to the Worcester Report, 4to. edit. page 13.—J. M.
merated

merated and valued, which swells the account to an incredible sum, for which the in-coming tenant is debited. One would think, that in fairness, a similar valuation should be made of the dilapidations or depredations committed in the buildings and the soil, the hedges, ditches and drains, and that this sum should be taken from the former, and the balance only be paid. But this is never done. The whole has very much the appearance of being conducted as if the out-going tenant were the only person whose interest should be consulted. The other is ordered to pay, without deduction, the amount of the debt, before he can have possession, and it not unfrequently so much exceeds his expectation and reckoning, as to be a considerable step towards his ruin.

The *Profits* of farming, under the old rotation of two crops of corn and a fallow, have seldom afforded more than a mere subsistence to the farmer, and the means of establishing his children to run the same course. But even this is no proof against the profits of farming at per cent. on the capital employed, which is generally so small a sum, that the foregoing produce may be a large per centage, and with sedulous attention this has been the fact, as the accounts of particular families, produced to me, have demonstrated a profit of 32 per cent. per ann. on the sum employed, for thirty-five years in succession. Indeed it seems to be evident, that a man who employs only 500*l.* and with it brings up a large family, and places them in a situation equal to his own, while himself retires with an easy fortune, could not have done it with a less return.

The great improvements which have for some time past been taking place in agriculture, aided by high prices for the produce of the soil, are occasioning such a rapid rise in rents; the taxes also, and every expenditure, are so greatly on the increase, as must, at the lowering of the price of corn and
F 2 cattle,

cattle, put farmers of the old school to considerable difficulties, and become one of the means of inducing them to adopt the new and better practice.

I have stated most of the expences, produce and profit, in the different chapters and sections to which they immediately relate, and beg leave to refer the reader to them for particulars. This account shall be closed with the following statement of the produce and expence of 150 acres of good grass land, at eight miles distance from St. James's hay-market.

Hedge-rows, and waste of the farm are 20	}	£.
acres; the mowing ground is 130, which		
yields at one cutting 260 loads of hay, and		1300
which have been sold for five or six years		
to average 5l. is		

The after feed sold for	- - - - -	65
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Total produce per annum	-	£.1365
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The expences have been :

For 4 horses, 35l. each, is	- -	£.140	0
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Three men all the year, at 12s. per week, is	93	0
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The extra labour of mowing and hay-	}	97	10
making, stacking, straw, thatching,			
and pulling, at 15s. is			

Taxes, assessments, and tithe	- - - -	130	0
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Marketing 260 loads of hay, at 4s. is	-	52	0
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Paid for 300 loads of manure, at 2s. 6d.	37	10
--	----	----

Tenants repairs of buildings	- - - -	10	0
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Insurance of stock, and tax thereon	-	4	0
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Pilfering servants, supposed	- - - -	10	0
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Frauds of hay salesmen, supposed	- -	10	0
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Mole-catcher one guinea, but say	- -	1	0
----------------------------------	-----	---	---

Interest of 700l. for one year	- - -	35	0
--------------------------------	-------	----	---

Total expences	- - - -	620
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Remains, for rent, and attention	-	£.745
		which

which is nearly equivalent to 5l. an acre. Suppose the party to pay 3l. an acre rent, it will leave 2l. which, on 150 acres, is 300l. a year profit, or 40 per cent. upon the capital employed.

CHAPTER V.

IMPLEMENTS.

THE *Plough* in general use throughout this county, is a swing one of the most clumsy construction. Its weight is more than one horse can draw in constant work, and its shape is very ill calculated for the ploughing of any soil, as it *tears* its way through the ground, instead of *cutting* it: a massive beam, with an horizontal bend (to give the plough land which sets the share in a direction contrary to the line of draught, and consequently increases the resistance), a barbarous shape, which, united to an awkward copps, makes it impossible to use it with horses drawing double. Its useless weight, and worthless shape, is a disadvantage of the draught of two horses.

The Hertfordshire wheel plough is used on part of the north border of the county, drawn by four horses, yoked in pairs, or sometimes by three horses; two yoked together next the plough, and the other before.

Harrows of four bulls each (not straight, but bent bulls). Three of them generally are chained together, and dragged by three horses abreast, with a man to lead or drive the horses, and frequently another to attend the harrow, going at a pace as slow as the animals can possibly move. In some instances, I have seen two horses at length, led by two young men; sometimes drove by one, and the harrows attended by the other. But in cases where the land is too wet to bear treading without injury, three or four harrows are chained together (no other coupling being used) to cover one ridge at a time, each attached to a pole, whose length is

is equal to the width of one ridge. Two horses are then yoked to each end of the pole, and walk in the furrows. By this contrivance, the land is harrowed, and the horses kept from treading on the ridges.

Two descriptions of rollers are in use. The *barley roll* is always made of oak, about twelve inches diameter, generally drawn by shafts, and by two horses at length. With this roll, all the land sown with spring corn is gone over a day or two after sowing, by some farmers, and by others, after the blade of the corn is out of the ground. The *grass roller* is also generally made of oak, about 30 inches diameter, and always with a pair of stout shafts, drawn by three or four horses at length. In some gentlemen's grounds, *iron rollers* are used in the same manner, and in those of others *wooden rollers*, made of four or five feet diameter, by nailing stout oak plank round the rims of three carriage wheels. Over this latter roller is sometimes placed a box, resembling a cart, for the purpose of loading the roller with stones, to add to the weight.

There are but few waggons employed. *Six inch wheeled shooting carts*, with wooden axletrees and iron arms, are in very general use, which hold, in the body of the cart, from 50 to 60 cubical feet; with the side boards on, about 15 feet more, and when heaped with dung, about 20 feet in the heap. Thus heaped, they carry about 90 feet of dung, with four horses, or from 70 to 75 with three horses. These carts, with the addition of movable head, tail, and side ladders or copps, carry hay, corn, and straw; and, when thus enlarged, are much more convenient than waggons. They are also less expensive at first, and occupy less space when out of use.

OBSERVATIONS.

Ploughing, like every other operation in tillage, will always be various, as no plough has yet been, nor probably ever will be constructed, superior to all others in every season, and on every variety of soil and shape of surface.

A thin skinned turnip and barley soil, may be well tilled by almost any plough. The principal excellence in a plough for this soil, consists in its being of light weight and easy draught, and also in its being competent to leaving the surface in any required shape, from a ridge of less than thirty inches, to one of upwards of thirty feet.

The light swing plough now in general use throughout the north of England and south of Scotland, and likewise some of the neatest of those in Suffolk, as much exceed the ploughs now made in this county, as coachmakers' work does that of a common wheelwright. They ought to be considered as working models of their kind, for the plough-makers of the rest of England.

There is not an arable close in this county, but what might be tilled by either of these ploughs, with two horses*, without a driver; a very few flinty loamy clays excepted, and which are bordering on Hertfordshire.

Wheels seem to have been added, for the purpose of assisting bad ploughmen in free soils, and of all sorts of ploughmen in stony, stubborn soils. They are, in general, expensive, cumbersome and unsightly, and are resorted to where the ploughmen cannot otherwise be depended on for regularity of depth and neatness of work. Bad ploughmen very generally rest a part of their weight upon the handles of the plough, which must necessarily

* Even the two worst horses in most of the teams in this county, might be made to plough six acres in six days, with ease.—J. M.

have a counter balance, obtained by giving the point of the share too great a dip, and in a direction contrary to the line of draught: thus the weight which the man rests on the plough, is more than doubled, which increases very considerably the labour of the horses. In order to remove this inconvenience, the Suffolk and Norfolk farmers cause their ploughs to be made with one handle only, which soon tires the hand of the man, who presses on it, and obliges him to walk upright, and carry his own weight.

In every county there are some superior ploughmen, who can regulate the coulter and share so correctly for executing of good work, that with any plough they carry their own weight. It is a fact, that the swing plough of every district, when held by a good ploughman, is drawn by less power than would be requisite to draw a plough of the same construction with wheels*. The disadvantage which the latter labours under, is occasioned by the weight of the carriage and wheels, and also by the share having too much declination.

Wheel ploughs happen to do their work with less trouble to unskilful men than the swing ploughs, for which reason

* Farmer Lemon, of Loddon, near Norwich, uses both the *wheel* plough and the *swing* plough: the former for a bad ploughman, and the latter for a good one. His brother occupied a sandy land farm several years, and excelled in ploughing with the Norfolk two wheel plough. He removed to a farm of strong loam in Suffolk, where he found that his horses did not support themselves in such high condition as before. He tried swing ploughs and wheel ploughs against each other, till he was fully convinced that wheel ploughs fatigue the horses more than swing ploughs. His new ploughs were, in consequence, all of the swing kind, and he has not used a wheel plough for several years; nor would he (says his brother) on light land, should he ever again occupy a farm of that description.

Mr. Davis also, in his Report of Wilts, observes, that "the farmers are very sensible, that a much lighter and simple plough would answer as well, or better, provided it was always used by an experienced ploughman; and the increase of good ploughmen has occasioned the two wheeled plough to be thrown by, as expensive and cumbersome."—*Wilts*, page 68.

they

they discourage the use of every other sort, by putting on a sour ill-conditioned temper, when any attempt is made to introduce swing ploughs where they have been accustomed to use those with wheels.

On a comparative view of the whole of any two extensive districts, whereof one is tilled with wheel ploughs, and the other by swing ones, as Berkshire and Norfolk against Middlesex and Surrey, including every description of ploughmen usually met with in those counties, it has appeared to me on many occasions, that for neatness of work, wheel ploughs have the advantage. This circumstance, and keeping the men in good temper, is probably of more consequence than a little disparagement in point of draught.

The light swing plough is ably treated of by Mr. Bailey of Northumberland, and it is, in many cases, a very superior implement; but like every thing of human invention, it has its defects, and is wholly incompetent to the ploughing any tenacious soil that abounds with stones.

There is much strong land in most districts, both with and without stones, which becomes so very hard in summer, as to be impenetrable to such a plough, and incapable of being well and neatly tilled by any swing plough.

When a tenacious stony soil is baked by the sun in a hot summer, and its moisture evaporated and carried off by drying winds, it can only be tilled by a powerful wheel plough; for which purpose the *Hertfordshire* wheel plough (I believe principally from the circumstance of its having a picked share) is superior to any other plough with which I am acquainted. Next to that, the *Kentish turn-wrest* plough, with a chissel-pointed share, is justly esteemed a very good implement; and for very deep ploughing, it probably may be entitled to the preference.

There

There are cases successively happening on every arable farm, which create a wish in the farmer to turn a few furrows more in one direction than the contrary—frequently near a road or foot-path, but more generally near hedge-rows; so as to turn the soil from them, and to plough head-lands wholly from the hedge. Every man who is attentive to his concerns, would, under such circumstances, discover the superior utility of a turn-wrest*.

There is also a wheel plough, though rather of a heavy construction, in general use near Reading and Newbury, in Berkshire, with which the men of that county work neatly and well.

The *double plough* now coming into use in Somersetshire, is liable to the objections which I have stated against the light swing plough, together with the additional objection, that if it were to be constructed for a strong soil in a dry and stony state, it would require eight or ten horses to draw it; but in the moist climate of the west of England, or in Ireland, these inconveniences will not be so often experienced as they would be in other places. Probably, for the purpose of ploughing a level close of a sandy soil into wide ridges, it may be either a first, or second best. It is, however, evidently more confined† in its operations than any single plough; but as it saves the expence of one person, in respect to attendance, there are many occasions when it would be an acquisition.

Deep soils of every texture are peculiarly adapted to the use of the *trench plough*, or of being ploughed two or

* A swing turn-wrest plough may be seen at work at Mr. Thomas Maynard's, Chartham farm, near East Grinstead, Sussex; in which the wrest is moved in half the usual time. It performs excellently. This farmer calls them snap ploughs, and says they are getting much into use.—J. M.

† It will frequently be necessary to have a single plough to finish the furrows between one ridge and another, after the double plough.—J. M.

more* slices deep. The first cuts off the weeds, and deposits them at the greatest depth; the next raises a slice of clean mould from below the soil which produced the last crop, fresh and full of heart, which it lays upon the vegetable rubbish turned down by the former, in such a thickness as to smother the weeds, and decompose them into nurture for the next crop. This operation will in every soil require a strong team, but one such ploughing is all that any land ought to receive, and it is sufficient for almost any crop. The slices being laid one over another, the land will generally harrow well; and when it is considered how many ploughings are now given, preparatory to a crop of turnips or barley, and, by the fallowists, for wheat; and also how much labour in the latter case is bestowed, in the raking, picking and burning of weeds; and also what a great expence these operations occasion to the farmer, it will immediately occur, that if these disadvantages can be removed by one trench ploughing, the result must be very greatly in favour of that method. Another advantage of high importance is, that under the system of trench ploughing, the staple of the soil is increased in depth, its parts are divided and loosened, which gives the roots of the crop room for the utmost range of their feeding powers, and consequently cannot fail of producing crops that will be proportionably greater by this, than any other method of ploughing.

A greater number of coulter than one, in any plough, do harm, by cutting the slices narrow, and in a perpendicular direction, so as to occasion their being laid on their edges. Trench ploughing, on the contrary, turns them completely upside down. The former method places the weeds within the influence of the atmosphere, where they

* The greater number of horizontal slices it is cut into, the better. — J. M.
will

will certainly flourish; the latter smothers and destroys them.

In this county, *harrowing* is a tedious business. The pace of the horses is disgusting; the harrows so often hitch one on to the other, that the man is obliged to stop a fourth part of his time to set them to rights. This might be prevented by placing a board, of six or more inches wide, edgeways upon the right hand bull of each harrow, or what perhaps is better, by coupling them together with hooks and eyes, and by driving the horses with whip-reins of sufficient length to admit the man to walk after the harrows (as is the case on the borders of England and Scotland, and in Norfolk and Suffolk). They would, as a necessary consequence, harrow four times as much land in a given time, as by the present method, and it would be done much better than it now is.

The *rollers* being usually drawn by horses at length, treading after each other, must necessarily make a horse track. This is very injurious to the ensuing crops: the earth which is occasionally scraped off the rollers, smothers every thing where it happens to fall, and there is a loss of time in such scraping. All these inconveniences are remedied in a roller which I have used for some years, with double shafts and a scraper. As to an open box, or cart, being placed over the roller, it is a useless appendage, imposed by the wheelwright on gentlemen, for the purpose of increasing his bill. Those persons also are mistaken, who have their heavy rollers made of very large diameter, as that very circumstance diminishes its pressure, by reason of its bearing upon too much surface at once. It is evident that small rollers, loaded to the same weight, must have a greater effect, and this is as well attained, and at a cheaper rate, by laying on the frame of the roller so many pieces of wood (each of them as heavy as a man can lift) as will produce the desired effect.

The

The *carts* now in general use in this county, are more clumsy and heavy in their construction, made more faultily, and of worse materials, than any I have observed in any other part of England. Even when empty, they are considerably heavier than one horse can draw in constant work, which difficulty is greatly increased by the breadth of the wheels*, as they must necessarily pass over every thing that lies in their way; whereas narrow wheels pass by every *small* obstruction, and more easily divide the dust in summer and the mud in winter. This is one of the great advantages that all light carriages possess.

The *single-horse carts* that are in use in various parts of England, appear to be the best calculated for the purpose of carrying all kinds of goods, except indeed in single trees, blocks of stone, or any other article whose weight may be too much for the strength of such carts, and which cannot easily, and without loss, be divided into separate loads. In all, or most places, where the roads are particularly bad, either arising from soft mud and clay, or large stones, and where there are deep ruts, especially in hilly countries, and where the people are poor, and consequently particularly studious to keep their expences under as much as possible—these are the places†, and the people, with whom single-horse carts are in common use, and is a proof of the economy of the plan. It is equally certain, that where the country is level, the roads free from ruts, and the people rich, they indulge in expensive horses, and in teams of parade and shew. Such, for instance, as those used by the brewers and distillers of this

* This inconvenience is occasioned by the act of parliament which prevents a load of hay passing over a weighing engine, unless the wheels of the cart are six inches broad.—*J. M.*

† Viz. in the mountainous districts of Derbyshire, Wales, Cumberland, Dumfries, Dumbarton, and various other parts.—*J. M.*

county and Surrey. The economy of single-horse carts is so clearly made out in the Cumberland Report, that I need not enlarge on their utility to a Middlesex farmer, further than to request his attention to what is said on that subject in the said Report. I have four of them in use myself. In loading the gravel of flints, they are always filled to carry twenty-five cubical feet, and for manure, from thirty to forty.

It is becoming daily more and more necessary for every arable farm to have a *threshing mill*. It is the only method left for having the corn cleanly and properly threshed. The men in the southern counties are too lazy to thresh clean, and too much given to pilfering to be trusted alone among the corn when threshed. This may seem severe, but I speak from experience at home, as well as from observation, and the complaint of farmers elsewhere.

No farmer can make an agricultural tour from Sussex to Northumberland, without observing an astonishing difference in the exertions of threshers, in favour of the north country men. For, in Middlesex, employ them by the day, and they will not do half a day's work, neither will it be done clean; and set them to work by the quarter, or the truss, and they will thresh the freest corn, and leave the rest in the ear.

Mills are very desirable, as they not only thresh clean, but may be made to winnow at the same time; and are so quick in the work, that it may all be done under the eye of the master, and the corn secured in the granary without the least pilfering. *The saving by this means of threshing, in the extra quantity of corn procured, and the security against having the corn stolen in the chaff, amounts to an advantage in favour of the mills, of about ten per cent. on the corn crops; in some cases, to one shilling a bushel on wheat,*
and

and very generally to twenty shillings an acre on the wheat crops.*

Every farmer of arable land should possess himself of a *scuffle*. They are of various constructions, but all of them have a number of plates or feet, the edges of which are steeled, and they are fixed at the bottom of as many iron bars, somewhat similar to the legs and feet of a duck. I have one which works with two wheels, but would probably do as well in the manner of a harrow with very stout bulls. The side of the triangular feet should measure about six or eight inches. This implement is used in the same manner as a harrow: its feet cut up the weeds, and, altogether, it pulverizes the soil. Barley and turnip land, after being once ploughed, may be made both clean and fine by means of this instrument, and the harrowing and subsequent ploughings thereby rendered unnecessary.

A *sweep* is of importance to every hay-farmer who makes his stacks in the fields, as it saves the labour of loading carts, and can be managed by two boys. All the hands may be employed at hay-making till five o'clock, and then the men may be sent to the stack, and as much done during two hours only in the evening, as hath been usual during the whole afternoon†.

I shall close this account, by referring the hop-growers to Mr. Maynard, whom I have mentioned in the former

* The expence of threshing wheat, in this county, by the flail, is full four shillings per quarter, supposing the land to produce twenty-four bushels. The threshing is twelve shillings per acre: to this add eight shillings for thin wheat left in the straw. Two bushels per acre, worth four shillings each, makes labour and waste amount to twenty shillings per acre, which, on twenty-four bushels, is ten-pence each on the saleable grain, and allowance being made for offering, will make the ten-pence a shilling.—*J. M.*

† For a more particular account and drawings of this machine, see my letter published in the fourteenth volume of the Transactions of the Society of Arts.—*J. M.*

part of this section, for a plain and cheap implement: in its shape, and mode of being used, resembling a snow plough. Drawing it once in a place in the intervals between the rows, renders them perfectly clean, and as smooth as the well rolled walk of a pleasure ground; while it earths up the rows by the same operation, which, about ten days afterwards, are easily made into hills with spades*.

* This machine is an equilateral triangle, whose sides are four feet, drawn by one corner; the front sides are shod by old scythes: the whole is strongly framed and loaded.—*J. M.*

CHAPTER VI.

COMMONS, INCLOSING, &c.

SECT. I.—COMMONS.

THE commons of Middlesex are situate in the more remote parts of the county, and bear a much smaller proportion to the whole quantity of land, than those of most other districts in the kingdom.

The names and computed quantities, are as follows, viz.

	<i>Acres.</i>
1. Hounslow-heath, which is said to contain about - - -	} 6,300 *
2. Sunbury-common, - - -	
3. Finchley-common, - - -	1,400
4. Harrow-weald, and part of Bushy-heath, commons, - - -	} 1,500
5. Riselip-commons, - - -	
6. Uxbridge-common, - - -	350
7. Harefield-common, - - -	200
8. Hillendon-heath, - - -	160
	12,650 acres.†

* According to Roque's map of Middlesex, Hounslow-heath contained, in 1754, about 6,658, and Finchley-common about 1,243 acres. Some part of Hounslow-heath was inclosed about 50 years ago; and in 1789, such part of this heath (viz. about 350 acres) as belonged to the parish of Stanwell, was inclosed by act of parliament. (Vide Stanwell, in this work).—*J. M.*

† The foregoing quantities are collected from a map, and are of course extremely erroneous; but they will serve at least to give a general idea of the extent of the commons.—*J. M.*

The

Brought forward	12,650 acres.
The remains of Enfield-chase, still uncultivated, from actual mensuration, are,	
The allotment to Enfield parish,	1,532
Ditto to Edmonton parish,	1231
Part of the allotment to the crown,	1,047
Ditto - to Hadley parish,	190
	4,000

Making together, 16,650 acres,
to which add, several smaller ones, under 100 acres each, such as Hampstead-heath, Pinner-common, Sudbury-common, Pinner-marsh, Roxhill-green, Apperton-green, Wembley-green, Kenton-green, Greenhull-green, Uxbridge-moor, Memsey-moor, Goulds-green, Peils-heath, Hanwell-common, and Wormwood-shrubs, which possibly may contain altogether 1,350 acres: then deduct for roads, ponds, and gravel-pits 1000 acres, and it will shew that the uncultivated soil of this county, capable of receiving improvement, is about 17,000 acres, or rather under one-tenth of the whole quantity*.

* "Exclusive of Hounslow-heath, Finchley-common, and Enfield-chase, there are a great variety of commons; the whole quantity of acres which they contain, in this county alone, I dare say, is not less than 15,000. These lands, if inclosed and divided, supposing them to produce such additional crops as would be equal to three quarters of wheat per acre, (which is surely a very moderate estimate, when we reflect, that in all probability much of this land will be converted into garden-grounds, which are cropped all the year round), would furnish the metropolis with an additional quantity of food equal to the daily sustenance of 237,260 men, at the rate of one pound of bread per day: to say nothing of the additional quantity of pigs and poultry, raised from the offals of the farm, or the cattle fed upon the aftermath or eddish."

"That improvement of waste lands, sometimes costs more than the land, when improved, may be worth, will happen to improvident and unskilful farmers; but the public, however, have the same benefit from the land being made productive. The quantity of labour which must be demanded, will increase the population of the country, and the revenue, and decrease the poor-rates."—*C. Franklyn, 2d Aug. 1793.*

Hounslow-heath.—Such parts of this tract of land as lie within the parishes of Twickenham, Teddington, and Hanworth, in case they were inclosed, would lett for very high rents. The rest of Hounslow-heath is land of such good quality, that it is disgraceful to the county, and insulting to the inhabitants of the metropolis, that it should remain in its present unproductive state; when most or all of it might, with perfect ease, be subjected to the fructifying influence of irrigation: and in consequence, be brought to yield a produce of upwards of 10l. per acre, per ann.—(*For a further account of this heath, vide 37 Henry 8, in the Appendix*).

Sunbury-common—and the green field on the north side of Laleham, would also, on being inclosed, produce very handsome rents.

Finchley-common.—The soil of two-thirds of this common is a strong loam, of ten or more feet in depth, very wet, and much poached by cattle. The east side, containing about one-third of the whole, is dry land, and nearly covered with furze. The wet part requires only surface-draining, to render it good sound pasture. On this common there are several thousand pollards, of hornbeam and oak, which never can produce a shilling to the lord of the manor, so long as they are permitted to occupy their present situation. Their numbers must annually decrease, as no new ones are permitted to rise, and I observed that several had lately been grubbed up. By taking the whole down at once, the proprietor might unquestionably put several hundred pounds into his pocket. This common carries a large stock, principally of sheep, through the spring, until the hay is made on the adjoining farms, when they are received into the inclosures.

This

This is of great utility to the neighbouring farmers. There are appearances of marl in various places; and from Muswell-hill, the south-east corner of this common, there is a most enchanting prospect over Hornsey, Clapton, London, and the beautiful river Thames. There are many points in this situation, that as much deserve to be adorned with elegant villas as any other spot in this, in many respects highly favoured country.

The moors between Staines and Longford—are, for the most part, on a gravelly bottom, but so often flooded and chilled by water, and so much injured by the poaching of cattle during the winter, that they produce but little herbage till the latter end of May. The greatest improvement that could be made on these pastures, would be effected by inclosure, embankment, and the use of fen-mills,

The commons in Middlesex, as in most other places, are three fourths of them covered with heath and furze*, from which a little of the worst sort of firing is obtained by the poor. The trifling quantity which cattle consume from these shrubs, does not, and indeed cannot, improve them, as it is barely sufficient to keep them from starving. Much of the remainder is occupied by roads, gravel-pits and ponds, yielding nothing. After the most mature consideration, I am inclined to think that about 5,500 acres of the commons in this county, are employed in the pro-

* There is a large quantity of land in Great Britain, producing heath, furze, and bents, all in a dwarf state, which would be very much improved by the proper application of lime alone, as it would gradually destroy those worthless plants, and in lieu thereof, produce a fine sheep pasture, without ploughing, or any other expence. In all situations, where the superstratum is thin, on a subsoil of gravel or coarse sand, and usually denominated burning, the same good effects would result from the use of marl, without ploughing.—
J. M.

duction of grass for the feeding of cattle, affording indeed but a miserable pasture, as the greater part is under water during winter; and, from being poached and trodden down by cattle while wet, is rendered hard, lumpy, full of holes, and partakes of the sterility of mortar during summer. The grasses are mostly of the dwarf kind, and of scanty produce, with a larger proportion of the carnation, and other grasses, which are known to be rather more dangerous than nourishing; so much so, as to induce *some of the most observing farmers* in various parts of the kingdom, possessing extensive common-rights, after a fair trial, to refrain altogether from turning their cattle on such commons. *On such authority it may well be questioned, whether commons are of any more use to the community than they would be were they consigned to the bottom of the deep.* But without attempting the solution of such a question at present, I may be allowed to observe, that the value of commons, considered solely as to their power of increasing animal food, and as totally unconnected with the adjoining inclosures, is exceedingly small indeed. But when considered as affording an opportunity to the neighbouring farmer to turn his stock out, at certain seasons of the year, they become an object of some importance. For instance, in the spring quarter of the year, by receiving the stock during those months, the growth of hay is encouraged, they answer the purpose of pasture, and the farmer is thereby enabled to mow all his inclosed grass land; which must sensibly increase the quantity of hay to be sent to market, as at Finchley, and Harrow-weald, in this county; or being applied, during the winter months, to the support of a greater quantity of live stock, in places more distant from a good hay-market; and in others, for the purpose of folding on the arable land.

On

On estimating the value of the commons in this county, including every advantage that can be derived from them, in pasturage, locality of situation, and the barbarous custom of turbary, it appears that *they do not produce to the community, in their present state, more than four shillings per acre!* On the other hand, they are, in many instances, of real injury to the public; by holding out a lure to the poor man—I mean of materials wherewith to build his cottage, and ground to erect it upon; together with firing, and the run of his poultry and pigs for nothing. This is, of course, temptation sufficient to induce a great number of poor persons to settle upon the borders of such commons. But the mischief does not end here; for having gained these trifling advantages, through the neglect or connivance of the lord of the manor, it unfortunately gives their minds an improper bias, and inculcates a desire to live, from that time forward, without labour, or at least with as little as possible. The animals kept by this description of persons, it is soon discovered by their owners, are not likely to afford them much revenue, without better feed than the scanty herbage of a common; hence they are tempted to pilfer corn, &c. towards their support; and as they are still dependant on such a deceptive supply, to answer the demands of their consumption, they are in some measure constrained to resort to various dishonest means, so as to make up the deficiency.

Another very serious evil which the public suffers from these commons, is, that they are the constant rendezvous of gypsies, strollers, and other loose persons, living under tents which they carry with them from place to place, according to their conveniency. Most of these persons have asses, many of them horses, nay, some of them have even covered carts, which answer the double purpose of

a caravan for concealing and carrying off the property they have stolen, and also of a house for sleeping in at night. They usually stay a week or two at a place; and the cattle which they keep, serve to transport their few articles of furniture from one common to another. These, during the stay of their owners, are turned adrift to procure what food they can find in the neighbourhood of their tents, and the deficiency is made up from the adjacent hay-stacks, barns and granaries. They are known never to buy any hay or corn, and yet their cattle are supplied with these articles, of good quality. The women and children beg and pilfer, and the men commit greater acts of dishonesty: *in short, the commons of this county are well known to be the constant resort of footpads and highwaymen, and are literally and proverbially a public nuisance**. And that they are so in the more distant counties, see the Gloucester Report, page 50, and that of Hereford, page 28. Additional injuries which commons render to society, are noticed in several other parts of this work.

That the commons of Middlesex are capable of being improved, so as to produce large crops of all the vegetables usually cultivated, and to rear and support a very highly improved breed of cattle, there can be no sort of doubt†. Indeed, it is truly lamentable to see, in every part of these
king-

* "In the neighbourhood of London, the improvement of the commons is particularly desirable, in order to prevent their affording shelter to highwaymen: this, and honest turnpike men, would soon annihilate those pests of society."—*Sir Richard Sutton*.

† "While in a state of common, every one turns on what he pleases, and there is generally double the quantity of stock that there ought to be, consequently they barely exist. Should an enlightened breeder wish to improve his sheep, he cannot do it, owing to his ewes mixing with his neighbour's flocks. If he had the best tup in the kingdom, can he be sure that one of his ewes were tupped by him, while there are probably a score of
his

kingdoms, such extensive tracts of land lying waste or uncultivated; producing no revenue to the owners of such property, and extremely doubtful if any, the smallest, benefit to the community. But it is particularly disgraceful to this, the first and principal county, which, so far from raising a sufficient supply of bread for its inhabitants, is under the necessity of importing corn from every quarter of the world (Europe, Asia, Africa and America), while, at the same time, it has *so many acres of good land lying waste, and locked up from the operation of the plough. By the single means of inclosure, an abundant quantity of corn might be produced, and 150,000l. a year added to the wealth of the county, which is now absolutely lost to society, with as careless an indifference as if the proprietors of the soil were afraid of becoming too rich; or, as if, like the dog in the manger, they would not permit the community to share in a blessing of which they themselves are not inclined to partake. But as it is very unreasonable that the nation should suffer from the obstinacy of persons of this cast, or disposition, who will neither cultivate the soil themselves, nor suffer others to do it, at a fair rent, a very popular, and I think effectual, remedy might be found, which is, to tax all the waste land in the kingdom,*

"his neighbour's to contest the female with him?—On the other hand, if the common were inclosed, every one would stint with that species of stock for which his allotment was best adapted, and in such numbers as would ensure profit. When he can confine his ewes within his own inclosures, he can make whatever experiment he pleases, by putting a few, or many, ewes to any particular tup, without any fear or apprehension of having a spurious breed, by the interference of his neighbour's. He is also enabled to keep his flock from many disorders. Few commons but what have some tracts of land liable to the rot: how are they to be prevented from depasturing upon it? or if the scab, or other infectious disorders, have taken place amongst any flock upon the common, how is he to avoid it?"—Cumberland, page 33.

with

with a view to enforce a general inclosure. The amount of the tax, and the manner of levying it upon the inclosed land which has a right of common attached to it, might be easily adjusted*. (Vide *Mr. Reid's letter, in the Appendix*).

Inclosing.—The benefits and advantages that would be derived from a general inclosure of commons, are so numerous, as far to exceed my powers of description or computation. The opportunity it would afford, of separating dry ground from wet, of well draining the latter, and liming the rotten parts, is of infinite consequence; as such an arrangement would, with the aid of intelligent breeders, be the means of raising a breed of sheep and neat cattle, far superior to the present race of *wretched half starved animals* now seen in such situations. It would have the effect of supporting a more numerous stock, upon the same quantity of food, by restraining the cattle and sheep within due bounds. Their restless and rambling disposition, not only treads the grass off the ground, but also takes the flesh off their bones. This renders the attendance of a shepherd necessary, and requires likewise that they be driven to and from the fold†. Further, the live stock would by this means be rendered many hundreds per cent. more valuable to individuals and the community, than it has hitherto been, or can possibly be, without inclosure; and, *what is of the last, the greatest importance, it would tend to preserve such improved breed from that*

* "The inclosing and cultivating of waste grounds, is a matter of the first consequence for the attention of the Board, in every part of the nation; but more especially near the metropolis, where manures are so plentiful, and every thing that land produces so valuable."—*From one of the returned Reports.*

† "Sheep feed more readily by being freed from the whims of the shepherd, and the teasing of his dog."—*Northumberland, page 51.*

destructive malady, the rot, which makes such terrible havock among our flocks. Add to this, that the markets would be more plentifully supplied with beef and mutton, and the price of these articles considerably reduced.

It does not appear to be necessary to state with precision (nor indeed is it capable of being so stated) what would be the increase in value, of the commons of this county, on their being inclosed, and well and properly cultivated. *It may, however, with safety be stated at upwards of fifteen times their present value to the proprietors*, and forty times their present value to the public†.* But increasing the rental of such land to fifteen, or perhaps twenty times its present amount, is by no means the greatest advantage that may be expected to result from an inclosure of commons. *The general salubrity and healthiness of the country would necessarily be improved||; while industry would be largely increased, among the most useful classes of society; beggary and robbery much lessened; and the general stock of corn and cattle*

* The present produce being only four shillings an acre, the rent cannot be stated at more than two shillings; and fifteen times that sum is but thirty shillings an acre; which is certainly less than they would lett for after being inclosed.—*J. M.*

† The present produce, as before stated, being four shillings an acre; forty times that sum is only eight pounds, which, there can be no doubt, is less than this land, after being inclosed, and cultivated, would produce. (Vide course of crops, and their produce).—*J. M.*

|| "I have to observe (says Mr. Billingsley, speaking of inclosure), with
"heartfelt satisfaction, its happy effects on the health and comfort of the in-
"habitants of the adjacent villages. Agues and low fevers, from the humidity
"of the air, impregnated with exhalations from the stagnant contents of the
"marshes, prevailed very generally during the vernal and autumnal seasons.
"And these, for the most part, were obstinate, and more frequently subdued
"by the drought and heat of summer, and frosts of winter, than by the most
"judicious medical treatment. Inclosing and draining have rendered these
"diseases as scarce in the low as in the uplands. To the prevention where-
"of, advance of wages (from four to six-pence per day) with constant employ,
"arising from the same cause, have not a little contributed, by enabling the
"poor to live better, which is generally accompanied by a growing taste for
"cleanliness."—*Billingsley's Report of Somerset.*

most

almost inconceivably augmented. And wherever inclosures are made with due attention to the interests of the poor (as they ought always to be), they will be found to ameliorate their condition, as much as they increase the property, and the comforts of the rich*.

The commons of this kingdom being, with very few exceptions, without ridges, furrows, or drains, have not the means of discharging that superfluous water from the surface of them, which is well known to be of great detriment to vegetation in general. Many commons in low situations, and where the soil happens to be of a retentive quality, hold water like a sponge, which being always stagnant, as well as excessive in quantity, renders the soil of such commons much too wet for the pasturage of sheep; and is, no doubt, the cause of many of the disorders which that animal is subject to, particularly that fatal malady the rot. From the same causes also, the neighbourhood of such commons must be particularly unfriendly to the health and longevity of man. Only let us reverse the scene, and for a moment suppose these commons to be inclosed, the necessary ditches and drains sunk, and the land brought into tillage, and we shall see all the superabundant moisture got rid of; and the water, being kept in constant motion, by trickling down the side of the ridges into the furrows, and from thence, into the ditches and rivulets, will be found to *fertilize* the very soil which, in its present stag-

* Here I am again happy to have my assertions corroborated by Mr. Billingsley, in his valuable Report of Somersetshire. He says, "I can truly declare, that in all cases which have fallen within my observation, inclosures have ameliorated their (the poor) condition, exciting a spirit of activity and industry, whereby habits of sloth have been, by degrees, overcome; and supineness and inactivity have been exchanged for vigour and exertion. No stronger proof can be given of this, than the general reduction of the poor-rates in all those parishes wherein such inclosure has taken place."—Vide *Billingsley's Somerset*, p. 35, and sect. 3, chap. 3, on cottages, in this work.

nant state, it serves to *injure*: while, by leaving the land dry, it will be rendered more healthy both for men and cattle. The effects of such a measure would soon shew themselves in many districts of this island, which, at present, are very unpropitious to the health of man, in the much greater longevity of the inhabitants.

It may farther be observed, that commons are entirely defective in the great article of labour; but no sooner does an inclosure take place, than the scene is agreeably changed from a dreary waste, to the more pleasing one, of the same spot appearing all animation, activity and bustle. Every man, capable of performing such operations, is furnished with plenty of employment, in sinking ditches and drains, in making banks and hedges, and in planting quicks and trees. Nor are the wheelwright, carpenter, smith, and other rural artificers, under the necessity of being idle spectators of the scene, since abundance of work will be found for them, in the erection of farm-houses, and the necessary appendages thereto; and in the forming and making roads, bridges, gates, stiles, implements of husbandry, &c. Even after a few years, when these kind of temporary exertions are over, by the whole being brought into a regular system of husbandry, it will still continue to provide both food and employment for a very increased population.

It is highly probable, that if the legislature should pass an act for the general inclosure of waste land, it would increase the quantity of rural labour so much, as to advance its price considerably, and thereby have the good effect of drawing a vast number of hands out of the unwholesome confinement of manufactories; where, in addition to the life-shortening effects of such confinement, the morals of the people are exposed to certain contamination.

With

With respect to the effect produced by inclosures on the population of the country, it may be observed, that the inclosing of 1000 acres in any one parish, would probably require 100 different labourers, many of whom would undoubtedly be drawn from such of the adjoining parishes as had less work than workmen. Thus it must follow, that the neighbouring towns and villages would *diminish*, just as much as the parish in which the inclosure is going forward would *increase*, its numbers; yet the amount of the community will evidently be the same. But although the inclosing of waste land certainly does not *immediately* either increase or decrease population, as some writers seem to have supposed, yet that inclosures *ultimately* affect population (and that as to its increase), inasmuch as the district is thereby made more conducive to health, is sufficiently evident.

Every thing that has a tendency to make a nation more healthy, and productive, must of necessity operate as a stimulus to population. The certainty of a man's being able, with ease and comfort, to provide for himself and family, by the increase of rural labour, is at once an inducement to marriage, and a consequent increase of population. If an increase of population is our strength (as no doubt it is), it follows, that not only inclosures should be encouraged, as having that effect, but also that every other means should be resorted to, for the purpose of preserving the lives of the people, *particularly by cultivating the arts of peace*, and by a general adoption of inoculation for that dreadful disorder the small-pox: the latter, alone, preserves many thousands (perhaps 20,000), which number annually perished by the disorder in the natural way, previous to that invaluable discovery being brought into practice.

The

The inhabitants wholly supported by agriculture in England and Wales, appear to be nearly, or perhaps quite, six millions * (while it supplies provisions for near two millions more), or one to every six acres and a half of cultivated soil. Not but that the extremes vary much, as there are some few grazing farms, with only one soul to fifty, and arable farms that are peopled in the proportion of one person to three acres of land. In point of produce, the commons, in their present state, apparently, though I think not really, afford entire support to human beings in the proportion of one to an hundred acres. But by being inclosed, and brought into the present ordinary cultivation of the country, every six acres and a half might do the same. Should agriculture experience a rapid advance towards perfection, as there is reason to imagine it will, both from the exertions of the Board, and intelligent individuals, every three or four acres would, in a few years, be capable of supporting its inhabitant; and as, from its nature, it might certainly be carried on from one degree of perfec-

* Cultivators of farms, six persons to every 100 acres, is	-	2,340,000
Ditto of gardens, hop-grounds, nurseries, &c.	- - - - -	300,000
Smiths, wheelwrights, bricklayers, masons, carpenters, painters, plumbers, glaziers, various manufacturers of furniture, woollen cloths, and making it up, linen and making it up, leather, and making it into shoes, boots, &c. hose, harness, and saddlery: as many of each of these description of persons as are wholly employed by the cultivators of the soil, men, women, and children, about seven persons to each farm of 100 acres, is	- - - - -	2,800,000
The like of millers, bakers, maltsters, brewers, distillers, starch-makers, dealers in corn, and persons employed in the commerce of corn	- - - - -	500,000
The landlords of farms	- - - - -	40,000
Persons supported by taxes on the produce of land	- - - - -	120,000
Total	- - - - -	6,100,000

J. M

tion

tion to another, it may even arrive at such a pitch of excellence, as that every acre of land shall support its man.

In the spring of 1795, proposals were circulated in London, for the formation of a company, for the purpose of cultivating the waste lands. Such a scheme, I should think not likely to succeed; as individuals can carry on any enterprize more economically than a society. The profits of agriculture, after the subtraction of rent, tithes and taxes, are by no means such as would make it a profitable concern to a company.—(*See Appendix, No. 3, 3*, and 4).*

NOTES UPON THIS SUBJECT, WRITTEN IN THE
MARGIN OF THE FORMER REPORTS, &c.

“As to the plan of improving Wimbledon, and other commons, I am afraid it would occasion great discontent, and be a hardship to many. Those who at present make use of the common, would expect either to enjoy it as at present, or have a piece of land in severalty instead of it. The small portion of rent which they would receive, would be no object to them. I apprehend, the right of common to an industrious active person, is very valuable; to an indolent one, it is nothing. Under the act of 1773, the improvement of Barnes-common is one-twelfth lett for four years, which is all employed in garden ground. Perhaps, if by a special act, a fourth part of such common was allowed to be lett for seven years, (I would have this and every case a large consent), it might go down pretty well, and the success of the improvement might bring on a general division.

“By the bye, as to the article of fuel for the poor, if instead of furze bushes being allowed to grow promiscuously, and to be cut up for their use, a certain part was fenced off, sown with French gorse, and cut by regular cuttings in rotation, it would be a great improvement.”—*Sir Rich. Sutton.*

I cannot help remarking upon this observation of Sir Richard's, that small commons, in the vicinity of London, might be advantageously inclosed on a parochial plan, namely, by an allotment to the lord of the manor, another in lieu of tithe, and the rest to the parish, who should apply the rents, one half towards the land-tax, and the other half in aid of the poor-rates. A plan something like this was adopted, a few years ago, at Walworth, in the county of Surrey, and answered completely.—*J. M.*

“A general

" A general inclosure and division of a common, in a country so populous as this, upon which so many parishes have a right of common, may be said to be a means of cutting it into very small pieces, upon which, individually, no very beneficial system of husbandry could on such small parcels be adopted; but this supposed evil will work its own cure, in a situation so near the metropolis. Sales and exchanges will be a means of affording an application of the soil to its right use: leases upon covenants, enforcing improvements, and either at a certain rent for a certain time, or upon increasing rents, as shall best suit the temper and circumstances of the contracting parties, will be a sure means of working the desired improvement."—*A note in the margin of one of the returned Reports.*

" The dividing these lands, when inclosed, into small farms, of not more than fifty acres, would be attended with the most salutary effects (though I find it difficult to convince a number of people of the dangerous consequences of the monopoly): it would increase the number of buildings, of inhabitants, and every necessary attendant of the wants of man. And though war is urged as a necessary measure, to prevent too great an increase of inhabitants, it is a reason no man of common feeling or sense would suffer to enter his head. I am thoroughly convinced, that if every acre of land in the nation was cultivated, it would provide very sufficiently for five times the number of inhabitants there is in it; and would, at the same time, enable them to live cheaper, to live happier, and, by a proper distribution of the gifts of nature, enjoy those rights which nature originally intended of partaking of her common gifts: it would increase the wealth of every land-holder, to an amount that perhaps he has not an idea of."—*In the margin of a returned Report.*

" Commons are certainly best inclosed, as they afford no real benefit to the poor who live on, or near them; for, although a cow turned on the common may get her own living for three months, which is as much as she will be able to do, without some assistance from the garden, bran, &c. the cottager, not having a bit of inclosed ground to grow hay, is sure, if he can have it at all, to pay very dear for it to the neighbouring farmers; and such cows, being obliged to be on foot all the day, and perhaps at night too, give but a very scanty meal when milked."—*P. F.*—On which a correspondent observes, that the poor cottager neither has the means of buying a cow, nor the right of keeping her on the commons.

" Must the lands of England lie waste, and the people be starved? or must something effectual be done to prevent the avarice and power of individuals from taking advantage of what they call their parliamentary interests, to defeat law and common justice? I am much pleased with the general inclosure bill, and mind not by what means they may, by inclosure, be rendered useful to the community, provided that absolutely necessary work be done."—*W. P.*

SECT. II.—COMMON FIELDS.

THE *common arable fields* of this county contain about 20,000 acres.

Common fields are divided into too many small properties. I have known thirty landlords in a field of 200 acres, and the property of each so divided, as to lie in ten or twenty places, containing, from an acre or two, downwards, to fifteen perches; and in a field of 300 acres, I have met with patches of arable land, containing eight perches each. In this instance, the average size of all the pieces in the field was under an acre. In all cases, they lie in long, narrow, winding, or worm-like slips. Land so distributed, occasions great loss of time to the farmer, in removing his teams and labourers, and, what is of equal importance, *he can neither cross-plough, nor harrow and clean such land, in a workman-like manner**. Neither can he sow any green or meliorating crops, vary the usual impoverishing succession, or even destroy the vermin. In short, the cultivator of these lands finds his expences double, and his crops only half of what they might be, if the land were laid together, and well fenced.

Common meadows are subject to many of the same inconveniences.

Nearly half the foregoing quantity consists of a good turnip and barley soil; the other half of a *barren soil*. The latter lies westward from Harrow, and seems to be preserved in a state of aration, in consequence of its being

* The following note is copied from the margin of one of the returned Reports:—"One great inconveniency attending common-field land is, the farmer cannot crop with that as best suits his soil, but is confined to sow such grain as must be cut with his neighbours'. An act to inclose common-field land, would be advantageous to the farmer, and make the estate compact, and of more value to the owners."

common-field. If the commonage were destroyed, and every man's land united, it would be mostly laid down for the production of hay, in which state it would *double* the present rent on a twenty-one years lease, and at the end of that time, would most probably be found in such a state of rich permanent grass, as to be of *three times* its present value. Inclosure is the greatest improvement for the landowners, that can be made on this *strong soil*.

Oak and elm seem to grow with nearly equal health on the whole of this district, though two or three places, of a few acres each, tend more to the oak. On the rest, the elm has rather the preference, and stands so close in the hedge-rows, that I have numbered eight trees in twenty feet. The oak is most infamously pollarded; the elm not quite so much.

An inclosure of the commons and common fields in this county, would considerably lower the price of hay in the London markets.

Inclosing the common fields, which consist of a *turnip and barley soil*, frees both the landlord and the farmer from the shackles of an exhausting and obsolete rotation of crops, and places them at liberty to stipulate for cultivating the soil in the most improved manner, keeping it clean, in better heart, raising such roots and green crops as are in the greatest demand at market, and only growing a crop of corn for the sake of renewing the course of green and root crops. In this manner, intelligent men, after inclosure, can double the produce of their land.

For further observations on this subject, see course of crops; also see the Hereford quarto Report, page 70.

SECT. III.—ENFIELD CHASE.

“ THE parish of Enfield, in its extent, its value, and its resources, is as follows :

“ 1st, The contents of the parish of Enfield, in statute acres :

	acr. r. p.	aver. value.	rental of parish.
" Inclosed pasture, - - -	1646 3 24	— at 30s. per acre,	— £2469
" Ditto, arable and pasture,	1245 1 13	— at 20s.	— 1245
" Common-field land, - -	2746 3 29	— at 15s.	— 2059
" Marsh land (a common) -	794 0 9	{ the value included in the foregoing prices.	
" Total quantity -	6433 0 35	Total rental of land	£.5773*
		Rent of houses -	3227
		Together - -	£.0008

	acr. r. p.
“ Amount of the above, - - -	6433 0 35
“ Uninclosed parish allotment subject to tithes, -	1532 2 6
“ Inclosed by the late act, part of the chase, discharged from the payment of tithes, -	{ 200 0 0
“ Total in the parish of Enfield, -	
	8165 0 1

“ The king’s allotment is not specified in the above account ; nor that part of the chase which is set apart in lieu of predial and vicarial tithes.

“ The rental of the parish being, according to the above statement, 9000l. † a year, a privilege of turn-

* This account is extracted from Mr. Foot’s survey, and it might have been advanced to 9000l. a year, without being over-valued.—*J. M.*

† This might be put at upwards of 12,200l. The 200 acres discharged of tithes, the King’s allotment, and the land set out in lieu of tithes, would probably make the rental of the parish, upon a fair valuation, amount to 17,000l. a year, as stated by Dr. Wilkinson, in the Annals of Agriculture, vol. xvii, page 352.—*J. M.*

“ ing stock upon the commons, or uninclosed pasture, will
 “ attach to every person possessing premises to the value
 “ of six pounds a year.

“ This privilege, however, not being restrained to any
 “ definitive number or description of cattle, there are,
 “ upon an average, not less than sixteen hundred and
 “ fourteen head of cattle, branded and turned on every
 “ year; by which the common is so destructively over-
 “ charged*, that the end which the privilege was design-
 “ ed to attain, is in a great measure lost†. These disad-
 “ vantages, which are occasioned by the inclination which
 “ each individual has to monopolize the whole, are con-
 “ siderably increased by the fraudulent use which the
 “ more indigent householders make of the privilege, by
 “ turning on the cattle of strangers to agist, at a low
 “ price.

“ To secure a certain profit, and to avoid the disadvan-
 “ tage which the avarice of each occasions to the whole,
 “ the following plan of stint might be adopted.

“ Every cottager to be allowed the pasturage of one
 “ cow and calf; or two heifers; or one horse; or one
 “ mare and colt.

* The more any common or pasture is stocked by sheep and neat cattle, provided they leave all their dung there, the better it is for the land, though in most cases the worse for the cattle. The land will keep increasing its capability of supporting such cattle; though the small advantage which the commons derive, by being overstocked, is not to be put in competition with the loss which the community suffers by perpetuating the commons, and consequently a worthless breed of stock. It is supposed that any dry pasture, which can now summer one hundred sheep, would bear the addition of one sheep to the number annually.—*J. M.*

† The appropriating 1532 acres of land in this parish to perpetual commonage, was a measure both impolitic and unwise in the extreme; it was, in fact, preferring a shilling to a guinea. The whole produce is now under ten shillings an acre, when, by division and cultivation, it might be advanced to eight guineas. The difference is upwards of 12,000 l. a year.—*J. M.*

“ The occupiers of land and houses to be allowed one
 “ cattle gait, or beast gait, for every six pounds a year
 “ which they respectively rent; reckoning one horse, or
 “ mare, equal to two beasts.

“ The quantity of stock which would probably be
 “ turned on, even under these restraints, would be a sur-
 “ charge of the common, as two-thirds of it is woodland.
 “ It might, however, serve as a standard by which the
 “ stint might ultimately be regulated, and the benefits of
 “ the common preserved*.

“ The number of houses in the parish of Enfield, in-
 “ cluding cottages, amount to 920; and the number of
 “ inhabitants to more than 5520;” which is, six to a
 house, or one inhabitant to rather less than two acres.

“ Of the above number, the poor, upon an average,
 “ are supported at the expence of 1380l. per annum, or
 “ thereabouts, by the parish.

“ In the workhouse - - - 780

“ Out-pensioners - - - 600

“ Together - - - £.1380”†

The foregoing from Mr. Foot's survey.

It is now near twenty years since the chase was inclosed; and it is said that, owing to the difficulty of the enterprize, and the original purchasers being mostly gentlemen who were retiring from trade, it is much less generally improved than it might otherwise have been.

This tract of land, in its original state, abounded with trees and bushes, which seemed to make it necessary for

* The only plan, in my opinion, deserving any attention in this case, is, to divide the land in severalty among the parties interested therein.—*J. M.*

† Besides the exclusive use of 1532 acres of land, which, lying so near the metropolis, ought to produce nearly 13,000l. a year.—*J. M.*

the cultivator to dig up the soil, and stock out the roots, before any of the ordinary operations of husbandry could take place. These were works which not only required much labour to effect, but also a very large expenditure of money, for which there was no *immediate* prospect of return. Oak was the only article which found a ready sale. The very unusual and extraordinary supply of stack-wood and bavons, so far exceeded the demands for those articles, that the price fell far below the woodman's labour. Inexperienced farmers became alarmed at these circumstances, and, in consequence, set themselves about trying confined, partial, and penurious experiments, certainly very ill calculated to succeed on a raw, crude soil, which had from the earliest ages been shut up by a thick foliage, in an excess of damp, excluded from the benign influence of the solar rays, and every other power of evaporation.

The wood, in the first instance, being only cleared away from small patches of land at a time, such cleared ground was, necessarily, still left surrounded on all sides by woods, which, by the redundancy of damp they occasioned, continued the disorder under which the soil naturally laboured. Again, the stocking up the roots, and digging the soil, as before mentioned, would unavoidably bury great part of the surface mould, which was by much the best, and in its stead turn up a worthless clay, a perfect enemy to the whole vegetable world: or at least, it would mix so much bad soil with the small portion of good, as to produce together a new surface, certainly much inferior to the one destroyed by this operation. It ought not therefore to excite surprize, that, under all these disadvantages, the soil should, as it were, sullenly and reluctantly yield back again even so much as the seed sown. In fact, it could not otherwise happen, till such time as the woods, being more generally cleared, the superabundant water

drained off, and the excessive damps evaporated, the soil should obtain a proper degree of dryness. Nor even then could great returns be expected, without the application of some stimulating ingredient (as turf-ashes, lime, marl, &c.) to correct the natural acidity and crudeness of the soil. But in order to make it permanently productive, manure should have been dealt with a liberal hand.

At length, however, the fire-wood being grubbed and marketed in less quantities, increased its price; and by the money it produced, opened the way for a more extended clearing of the soil. "The half-yard wood, which was originally given as a recompense to the labourer for clearing the ground, now yielded to the proprietor seven shillings a stack; the spikes twenty-four shillings; the bavins, when drawn to town, from sixteen to twenty-four shillings per hundred; and the spray, being made up into what they called "pimps," several shillings profit.

"The account between the proprietor and the labourer therefore now stood thus, viz.

	Labourer.	Sold by the proprietor for
	£. s. d.	£. s. d.
" To one stack of half-yard wood, 14 feet long, 3 feet high, and 3 feet wide,	0 4 0	0 16 0
" Ditto, yard wood, ditto,	0 2 0	0 16 0
" To 100 spikes, - - -	0 1 6	0 6 0
" To 100 bavins, - - -	0 2 0	0 8 0
" Roots, and collier's ware, per stack, the same measure as the half-yard wood,	0 8 0	0 12 0
" Ditto, rough roots, - - -	0 7 0	0 11 0
" Pimps, per hundred, - - -	0 1 6	0 6 0
" Together -	<u>£. 1 6 0</u>	<u>£. 3 15 0</u>
		This

This rise in the value of the above articles, plainly evinced, that though, under a parsimonious management, the soil refused to repay the toils and expence of husbandry, in the produce of grain, it would, at least for a short time, yield, in the value of fire wood, sufficient to answer the demands of the crown for rent. This circumstance, no doubt, was the means of its being cleared from wood. But unfortunately, the occupiers not knowing how to cultivate this kind of soil to advantage, and withal, being apprehensive of incurring a considerable loss, by any mistake in the management of it, let it lie in a state of waste for several years; and it would probably have continued so till this time, had not the more spirited, and well-directed exertions of a few enterprizing and intelligent individuals, shewn the way to success.

The improvements that have been made on the chase by George Byng, Esq. the present worthy member of this county, together with those of Francis Russell, Esq. and Dr. Wilkinson*, are very considerable, and reflect the highest credit on those gentlemen.

It is a matter of some doubt, whether the best mode of improving such a soil as that of Enfield-chase, was then known in this part of England; but it is certain that it was not practised. It is also clear to demonstration, that unless a well-digested system be pursued, the profit must be precarious, and the success of the undertaking uncertain. But now that so much additional light has been thrown upon this subject, by the observations and experiments of practical men, it is scarcely possible that any person, desirous of entering on the cultivation and im-

* In the *Annals of Agriculture*, vol. xv, page 341, vol. xvii, page 352, and vol. xx, page 451, Dr. Wilkinson has given much information respecting Enfield-chase; and has also made some important observations respecting the best mode of cultivating waste lands.—*J. M.*

provement of waste land, can find any difficulty in procuring information as to the best and most approved methods of doing it; especially if he be willing to recompense men of skill and integrity for their advice and assistance in the undertaking.

As to Enfield-chase, if the parties concerned in the cultivation of it had set out upon a liberal and judicious plan, in the first instance, and began by felling the timber in the proper season, and disposing of it at the best market; next pared the old sward, and stocked out all the roots; and, as soon as they were dry, burnt the roots, bushes and sward into ashes; then ploughed these ashes in with a very thin furrow (in order to avoid bringing up to the surface the wretched subsoil); after this, spreading lime, and harrowing it in; I say, had this method been adopted by the first cultivators of the chase, I think I may venture to assert, that I should not now have heard complaints against the soil, or that it would be called sullen and unproductive. At least, it would have grown tares, and perhaps cole, which should have been eaten by stock, on the land which produced them. This should have been annually repeated, and the land plentifully supplied with manure, brought from town and the farm-yard, until the soil had acquired a sufficient degree of richness to be *laid down to permanent grass*.

The land of the chase is, in its nature, too stubborn to answer in a course of aration, particularly as it is so near the metropolis, and where the expences of horse-keep, and men's labour, are so high, that they would consume all the produce of such land. *It should therefore be only pared, burnt, ploughed, drained, limed, and manured, and then laid down clean and in good heart, to permanent grass.* Indeed, wherever there is a clean skin of good plants already, it will be sufficient that it be well drained
and

and manured ; in which case the grasses will be sure to improve, and in a few years become good meadow. In short, the whole does not differ so much from the land at *Hendon*, in point of quality, but that successive manuring for the space of one hundred years, as the latter has experienced, may render the *chase* as famous for the production of prime hay, as that place now is.

Enfield allotment, on the chase, is in part stocked with thriving young oaks ; much of it with hornbeam ; and still more with thorn bushes : so that from a tenth to a quarter of the ground is left in grass (mixed with carnation, *alias* starvation grass) for the pasturage of cattle.

Three-fourths of *Edmonton allotment* is covered with bushes, and has about one solitary, unthrifty, and unsightly tree, to an acre. And as these are deficient in side branches, they look like may-poles encumbered with ivy. The live stock, of course, is proportioned to the scantiness and poverty of the pasture. Indeed the whole scene has too much the appearance of a wilderness, to please me ; but, however, it only wants cultivation, to bring its beauties into notice. This land appears to be very thin skinned, yet, so long as it may be doomed to continue in common, to the disgrace of the nation, a certain, cheap, and easy method of improving it would be, to grub up all the bushes ; plough surface drains sufficient in number to lay the whole dry ; spread the soil turned up by the plough ; and, at all times afterwards, to grub the yearly shoots, and keep the drains open : the whole would soon be covered with grass, become a clean, though poor pasture*, and at the same time capable of doing better by the present stock, or of supporting an increased one. In short, its capacity for supporting stock would increase yearly, as all pasture land does, till it ar-

* Vide Dr. Wilkinson's letter, in the Appendix.

rived at a degree of perfection and fertility sufficient to bear both the scythe and the plough.

The new inclosures near Beech-hill are not half cultivated. The turf has been ploughed, without being burnt, and has been laid down again without being properly reduced. The bushes, indeed, are mostly destroyed, but the coarse wiry bent is still left.

The west side of the chase has a subsoil of marl, which is indicated by the spontaneous production of beech. Though it is frequently interrupted by, and mixed with, yellow clay; and in general, the marl is so loaded with clay, as to prevent even the best of it from very strongly effervescing with acids.

The whole surface soil is of a poor complexion, and consists of alternate jambs of flinty gravel and yellowish clay, which is a most unfortunate circumstance to the cultivator, owing to their requiring a different treatment; and the change is so sudden and frequent, as to produce the necessity of cultivating them in the same manner.

Mr. Byng's new inclosures are conspicuously managed in a superior stile, producing a succession of *tares and wheat, equal to any in the county.*

The clover near Potter's-bar (1796) looked well, but was smothering in oats, the produce of those lost by letting them stand too long on the ground the preceding harvest. There is much wheat growing in various new inclosures on the chase, and the best crops are invariably on the narrowest ridges, namely, those of about thirty inches wide.

The entrance to Enfield from the windmill, is charming; it abounds with smart boxes of from 30 to 60l. a year. And, on the borders of the New river, they are embellished with clean shaven turf, and medallions of ornamental shrubs.—(See Appendix, No. 5, 6, 7, 8, 9, and 10).

NOTES.

" South Mims inclosure is also part of Enfield-chase, and consists of near
 " 1000 acres. In its uninclosed state, it is supposed not to have yielded the
 " parish at large more than 2s. an acre per annum. But since its inclosure,
 " it is worth, on an average, 15s. an acre per annum. It is at present in
 " tillage; but in a few years it may be converted into grass, which will
 " still farther increase its value."—P. F.

A gentleman remarks, in the margin of one of the first Reports, that " those
 " persons who are for ploughing and sowing the land, without considering
 " the state it is in, are most likely to lose their crops; and being disap-
 " pointed, they begin to try experiments. I have seen this particularly on
 " Enfield-chase, where the roots of furze and thorns have been grubbed
 " up, and the soil ploughed deep, which set their furrows nearly on their
 " edges. The grain was harrowed in, with the soil in this hollow state,
 " and the greater part of the seed was lost. And that which had the good
 " fortune to vegetate, came up very weak, and smothering with weeds,
 " which were growing between the layers of the plough, and of course the
 " crops were lean and unproductive. This could be attributed only to the
 " defect in point of husbandry."

It is observed by Mr. Selby, in the course of some observations he made
 on this paper, as originally written, " that it is in a great measure owing to the
 high price and scarcity of that valuable stimulus to vegetation (lime), that
 large quantities of land lie dormant and uncultivated, in many parts of this
 kingdom, particularly in the northern counties, where there is an abundance
 of both limestone and coal. But these articles are frequently so far separated
 from each other, that it is impossible to convey the coal to burn the lime-
 stone into lime, but by shipping. In this case, the duty at present laid upon
 all coals shipped and sent by sea, is so high, that it operates as a direct pro-
 hibition against the establishment of lime-kilns. To supply the demand at a
 moderate price, as it is an astonishing preparer of the food of plants, the easy
 attainment of lime is an object of the first importance: it would be a matter
 worthy of parliament, under the recommendation of the Board of Agriculture,
 to take off the duty on small, and all inferior sorts of coals, shipped for the
 purpose of being consumed in the burning of limestone into lime. None of
 these sorts of coals are shipped at present, and in general, they are wasted,
 and allowed to lie near the pit in heaps. It would increase the revenue, by
 augmenting the quantity of barley to make into malt, as well for beer as for
 the distillery: it would be an additional nursery for seamen; and it would
 employ a great number of men and boys, in gaining an honest livelihood, by
 labour and industry, which ought to be encouraged as much as possible, in
 this, and every other kingdom."

See also Mr. Reid's letter in the Appendix—And Dr. Wilkinson's letter
 and map, in ditto—And Mr. John Wigstone's letter in Appendix.

SECT. IV.—STANWELL INCLOSURE.

THE *waste land* of the parish of Stanwell, previous to the inclosure, consisted of somewhat more than 500 acres, of which about 350 were part of Hounslow-heath. In their former state, they were *worth little or nothing*, but such was the effect of inclosing them, that they were lett immediately afterwards from 15s. to 25s. *an acre*, and on an average 1l.

The common fields were, on being inclosed, almost throughout the whole parish improved in rent from about 14s. to 1l. *an acre*, and much of the best of them, near Staines turnpike-road, to 25s. or 30s.

I am informed that 30 acres were set apart, and lett for 30l. per ann. and that all the cottagers in the parish, who do not receive alms, and rent a cottage of more than 5l. a year, are annually to have such rent divided among them, in equal proportion*.

By a clause in the act, power was given to the commissioners named in it, to sell by auction such part of the heath as was necessary to defray the expences of the inclosure. *The waste land thus sold produced 21l. per acre.*

The occupiers have found great advantage in sowing artificial grasses and turnips, in that part of the inclosure which till then had been in common fields, and consequently never had produced those crops. They are now enabled to keep as much stock on *part* of the land as they did on the *whole*, and such of them as *pared and burnt their allotments on the heath*, are reaping equal advantages.

* This appears to me to be a much better method of satisfying the claims of cottagers, than, as is the case in some instances, leaving a certain proportion of land uninclosed for their use.—J. M.

But unfortunately, most of them ploughed *without paring*, and they now labour under very great disadvantages on that account. They find that the dwarf-heath is of an imperishable nature, and that it, together with the remains of the *furze* and *bent*, is exceedingly troublesome to plough and harrow; it also keeps the land too hollow and spongy, so that even rolling is no security, as immediately after the passing of the roll, the elasticity of the heath raises it to its former height. The crops come up well, and continue so till nearly half grown, at which time they die away, and produce not half a crop. On the contrary, Mr. East (and perhaps some others) pared and burnt his allotment, and finds no such inconvenience. I have to blame him for taking a crop of corn in the first instance: the wiser way would have been, 1st, turnips; 2d, tares; 3d, turnips; 4th, barley; then clover.

SECT. V.—SHEEP DOWNS.

Downs are, I conceive, not only disgraceful to the owners and occupiers of such land, but a very considerable drawback on the agricultural character of the nation itself; since they may unquestionably be applied to a much better purpose.

There are but few of them which have not depth of topsoil sufficient for the production of corn, pulse, &c. though in their present application, as mere pasturage for sheep, which are not allowed to dung on them, they can be considered as *very little better* than commons*.

* Indeed these lands may be considered, as in a worse state than if they were in common, and the sheep continued on them day and night.—J. M.

Sheep-walks and downs are unnecessary; rather let the farmers double, or treble the quantity of their green and root crops: thus would they keep as great a number of sheep on less than half the land, and would by these means render it rich as a kitchen-garden, which would of course increase its produce to a very great degree.

Most of the land called down, has a subsoil of chalk, than which it is well known there cannot possibly be a better for the production of *sainfoin*, or more congenial to the growth of that valuable plant, which, either green or in hay, is allowed to be *the best food that can be given to sheep, horses, &c.*

The south and west country downs are naturally similar to the isle of Thanet*, which has lately acquired the name of one of the best gardens in the kingdom, although within the memory of men now living, the greater part of some of the farms in the upper part of that island was *poor barren sheep-walks*. Now these very lands are covered with crops, *nearly equal to what the best land produced formerly.*

It has been the constant and invariable practice, from time immemorial, for *the whole produce of sheep-downs to be barbarously carried off them* by sheep kept, for the sole

* "A dry loose chalky mould, from four to six inches deep, mixed with flints on a subsoil of dry hard chalk, a great part of it naturally as poor land as any in the kingdom, but which, by dint of cultivation and manure, is made to produce most excellent crops of corn of the first quality."—Boys' Kent, pages 15, 16, 17, 34, 35, and particularly 37, where Number 8 is a most excellent course of crops for such kind of land; and also see page 77. Also Surrey has its downs of a similar quality, nine-tenths of which are in aration. Also see Mr. Gilbert's practice on the hills near Eastbourne, in the Annals of Agriculture, vol. xxii, page 233, which he improved from half-a-crown to fifteen shillings an acre.

No man capable of judging on these matters, can ride over the South-down, without daily meeting with instances of the wisdom and profit of cultivating them.—J. M.

purpose

purpose of bringing away the dung procured by their feeding upon these downs, to the arable land on which they are folded at night. As there is no return of manure made to these lands, they are entirely indebted to nature for their scanty produce: it is evident the best land in England would not be in much better plight after suffering in a similar manner.

The pasture of all the sheep-downs in the south and west of England, has undergone the severest depredation time out of mind; and their present poverty is the natural consequence of such a degree of exhaustion as no other land has ever suffered. Summer and winter, the whole of its produce has uniformly been carried off and deposited on the arable land, in order to fill the farmer's barn by the trifling labour of cultivating only a corner of his land. Perhaps one quarter of it is, by sheep and the fold, kept very rich, and the other three quarters are nearly ruined, to the proportional loss of the landlord and the community.

So far as my observations have extended, sheep-downs are rather on the wane, by the much wiser appropriation of them to the free use of the plough, and to the growth of sainfoin. I hope to see them still more on the decline, which I think cannot fail to take place, as it is incontrovertibly true, that they may be occupied under another, and a much better, system.

It may be observed, that it is the more sheltered situations on these downs that are first chosen for the purpose of being reclaimed from their present state of poverty, and of being brought under the dominion of the plough. This circumstance suggests the propriety of planting and raising a sufficient number of broad hedge-rows, in order to divide the downs into distinct closes, the size of which should be proportioned to the requisite quantity of moisture,

and other circumstances of situation, &c. as judgment may direct. Such trees and shrubs as are best calculated to succeed on a calcarious soil, should be raised on the higher and more exposed situations*, as *plantations and hedges are the only means of procuring that shelter and warmth which are necessary to produce rich pasturage, large green crops, and perfect animals.*

Till this is done, it is in vain for the farmers of waster, downs and sheep-walks, to attempt the breeding, rearing, and keeping of the best stock; but a division of these lands, and the raising of live hedges and plantations with judgment, would be the means of acquiring that equable temperature which is so essential to the perfection of vegetable and animal health.

This temperate climate being procured, the improvement of animals might next take place; it would almost be the necessary consequence of superior feed, shelter, shade, and more equal warmth.

By doing these things, not only the proper proportion of moisture, shelter and shade, might be obtained, but at the same time the plantation would afford a considerable profit in due season.

It is stated, that the South-downs support a sheep and an half per acre†, and that the county of Dorset supports *one sheep per acre*‡, including their richest bottom land; and it is possible, that, exclusive of all cultivated land, the sheep-downs of the south and west of England, taken together, may maintain nearly one sheep on every acre of land: thus yielding a scanty miserable produce of not more than 10s. *per acre*. The farmer would not obtain

* That plantations would succeed on these hills, see Wiltshire Report, quarto, page 12, and Dorsetshire Report, quarto, page 33.

† Young's Annals.

‡ Claridge's Report of Dorsetshire.

much credit, in my opinion, who could not make the same district produce him *more than eight times the sum*.

It cannot in reason be expected, that land which has been depredated and injured in the manner before mentioned, without intermission, during some centuries, should be found immediately able to bear a succession of three or more corn crops*. No; on the contrary, such land should, during a few years, be successively sown with green crops only, all of which ought to be eaten on the spot where they grew; or, if carried off to be eaten in the farm-yard or elsewhere, the dung thus produced should be returned to the same land. This system, strictly followed, and then laying it down with sainfoin in one thin crop of spring corn, would furnish a source of plenty for near twenty years; and provided justice be done in the management of it during that time, it would then be fit for all the purposes of alternate tillage and pasture in perpetuity.

To improve these downs, a total stop should be put to dung carrying by sheep, excepting only in the cases of water meadow, which may be fed by sheep, as usual, during the spring; but they should be folded at night on the downs, or on land recently ploughed from the old sward of the downs. Also, pare, burn, manure, do any thing, to get *tares, turnips, cole, and repeat the crops of tares, turnips, cole; then barley, clover, tares, turnips, cole, barley, sainfoin to continue. Divide and shelter the whole by hedges and plantations, and feed all these crops (except the barley) upon the*

* As is too generally practised on the breaking up of down land. It is a fundamental error in cropping in the first instance, together with the cry of *interest* in some farmers, and the prejudice of *old habits* in others (who have been long used to large sheep-walks), which have been the powerful means of delaying the general cultivation of the downs, and also most unjustly brought the beneficial practice of paring and burning any very rough old turf, into disrepute with some correspondents of the Board.—*J. M.*

very soil they grew in by sheep, and no one will hereafter say that the downs are beyond the power of being improved.

In short, it is a proper selection of such green crops as are suitable to any given soil, a judicious arrangement of the rotation of them when selected, and feeding them off with sheep, that are the most likely means to improve the soil, as well as greatly to increase the number, and enhance the value of that most useful animal*.

Carrying these ideas completely into execution, would not only load our tables with mutton, but would also give additional extension and support to the woollen manufactory, and diffuse plenty and chearfulness among numerous ranks of the community.

SECT. VI.—FENCES.

THE hedges are generally full of live wood, consisting mostly of hawthorn, elm, and maple, with some black thorns, crabs, bryers and damsons: the last frequently very fruitful, which is the cause of its being destroyed. All these are made anew once in ten or twelve years; at which time the whole is cut down to within a few inches of the bank. The scouring of the ditch is thrown up, a very thin stake and edder hedge is formed, and all the rest of the wood is made into bavins, and sold principally to bakers, at about a guinea a hundred delivered. In about two years, the live wood is grown so thick again, as hardly to be seen through.

This method is found to answer very well. The mould thrown out of the ditch may be considered as earthing up

* For the more dry lands of the down kind, I submit the following course of crops to the consideration of the Board, viz. pare and burn for 1st, turnips; 2d, tares; 3d, turnips; 4th, a thin crop of barley; 5th, clover; 6th, tares; 7th, turnips; 8th, barley, thin, to produce about half a crop; then laid down with sainfoin.—J. M.

the plants, and it is always done loosely. The plants thus grow with vigour on the sides of the bank as well as on the top, thereby preserving the bank from destruction by cattle. It is far superior to the methods practised in some other counties, of making a solid wall-like face to the bank, in some cases of stone, which smothers all the shoots that would otherwise grow from the sides of the said bank, and of course exposes it to be pulled down by the horns of neat cattle, at the same time that it greatly reduces the produce of the hedge.

In planting new quick hedges, it would probably be a great improvement on the old practice, to put two rows of thorns in at about two feet apart. When grown up, they should be cut alternately, one every five or six years. Thus the cut wood would be ten or twelve years old, and the other, left for a fence, would be five or six, which would be sufficient both for a fence and to protect the young shoots from the bite of cattle on one side; should there be any on the other, a few loose thorns in the ditch will secure the quicks from their depredation. This regulation would make the hedges a source of constant profit.

Quicks ought to be bought of the nurserymen; those are best, on account of their greater number of roots, which have been transplanted twice, and that are about five years growth from the haw. If quick-sets are bought after they are taken up, beware they are not those drawn up by the roots on the commons (*i. e.* wild quicks), as they are stunted plants, canker, and never grow well. It is a custom with people who live near, and on the commons, where there is an inclosure, to collect the wild quick, cut the top off within only two or three inches of the stem, and sell the roots. They sell them at a

lower price than the nurserymen do, but they never make a good fence.

Stagnant water is very injurious to the hawthorn, which therefore never should be planted by the sides of ditches containing such water. In these situations, willows should be used instead of thorns, and in the same manner they would become a hedge in less time, and be even more profitable than thorns.

The usual method of planting quick on the edge of the ditch next to the bank, is almost the worst possible. Let the soil be what it may, the operation of the elements will make it crumble away from the roots, and leave the sets without sufficient mould to support them. This was particularly the case at Stanwell, in this county.

If the parties make choice of planting young quicks, I would recommend a bank of sufficient width (not less than four feet wide at top) to allow of planting two rows, at two feet or more asunder, on the flat surface of the bank; taking care that the roots penetrate the best mould, and that the sides are so sloped as to leave no fear of their mouldering down, with a ditch on each side; to which I would add, the laying a few loose thorns in the ditches, to keep cattle off. According to this method, post rails and dead hedges are unnecessary, as no cattle can stand nearer than six feet to the stems of the quicks: of course, there is sufficient security against the bite of cattle, both while the plantations are young, and at every subsequent cutting.

But the method above all others the best, if it should be found to succeed, as it probably may on a moist soil, in a moist climate, is the grubbing of thorns five or six feet high, in copses, &c. trimming the roots, and planting them closely on one spit of the best mould laid on the turf. This should be taken from where the ditches are intended

to be made, and chopped well to pieces. Then raise a bank on their roots round their stems, at least three feet high, and cut their tops level, two feet above the bank. They will form a perfect hedge as soon as this is done*.

For fences to stand the sea breeze—see Somerset Report, quarto, pages 171 and 179.

So far as the mere purpose of a fence is intended or desired, stone walls are the best of all, as they occasion the least waste of ground, do no injury to the corn crops, do not harbour vermin, and are free from the weeds and rubbish that invariably accompany live hedges. Nor be it forgotten, that they nearly exclude the greatest of all vermin, to a cultivated country, *hunters* †.

In all newly-inclosed land, the landlord can scarcely take sufficient care to secure the farmer's attentive protection of the quicks and young fences. So much indeed depends on it, that if the farmer shews the least neglect in the matter, it should be in the power of the landlord to take the fences into his own management, and to charge the tenant with every expence attending it, in order that they may be perfectly protected from every species of injury or damage ||.

Herbage succeeds better in close situations than corn, which is successful in places more exposed. Hence, in the making of hedge-rows on new inclosures, particular attention should be paid to the climate, and to the nature, elevation and aspect of the soil, and also to the manner in

* See the Welch Reports; and Somerset quarto, page 66.

† Those lovers of a savage life are as unfit for a cultivated country, as are the stinking objects (foxes) of their pursuit.

|| It is essentially the business of the landlord, or his agent, to see that the tenant complies with this covenant in every particular, at all times, but more especially during the first eight or ten years, by which time the fences will be matured; and that the quicks should be entirely secured from the bite of cattle, by nets, hurdles, post and rails, or ditches containing thorns.

—Y. M.

which its owner intends it should be cropped. Equal care likewise should be taken, to guard against the extremes of too much exposure, and that of creating a thick damp atmosphere, as the health, thrift and beauty of animals, are greatly promoted by proper shelter, and a due circulation of air. For instance, a low, flat, and naturally damp situation, divided into small inclosures by high hedges and broad shaws, especially if they abound with trees, is totally unfit for the production of corn crops, and still more, if it be exposed to a northern aspect and inclosed with wood. In that case, the sun is too much excluded, and the damp cannot be sufficiently drained and evaporated, to prevent the redundancy of moisture from chilling the better plants, leaving an herbage that will be of no value to a farmer. On the contrary, if it be free from adjoining woods, be drained, and the ditches kept well cleansed, it would make good permanent pasture, or meadow. If, in addition to these, the hedges should be kept closely cut, or elipt, the fields large, the trees trimmed to the height of twelve or fifteen feet, and every possible method taken to promote the free admission of the sun's rays, with a perfect drainage and evaporation, it would be fit for many of the purposes of aration.

Also light sandy land on a subsoil of gravel, and all land that is too dry, should be divided into small fields (proportioned to the degree of drought, and the intended crops) of three, five, seven, or ten acres each. Planting timber in the hedge-rows, and raising large growing hedges and shaws, would greatly increase moisture, and prevent the ill effects of drought.

Stagnant air does not evaporate redundant damp sufficiently; like stagnant water, it may become injurious to health, shortening the duration of life, as it certainly does in all flat moist situations, with small inclosures, where
the

the hedge-rows are broad, thick and full grown, especially as such situations usually abound with timber, copses and woods (as in the wealds of Sussex, &c.). This greatly increases the redundancy of damp, and renders it unfriendly to corn crops. Air also may pass too freely or rapidly over a country, for the fattening of animals, and for vigorous vegetation; as in the cases of mountains, high hills, and the south and west country downs, which circumstance every moment removes the warmth of the animal's own atmosphere, and introduces a continual succession of cold air, equally injurious to animal and vegetable life. It is as well for the purpose of shelter, shade, and equable warmth, as also of occasional fresh supplies of grass, that the Leicestershire graziers have founded their opinion of fifty acres in five inclosures being equal to sixty in one.

I apprehend that the more equable this island can be made, in point of shelter, shade and warmth, being well drained, and preserving a due circulation of air, the better will be the health of its inhabitants.

In order to promote so valuable a purpose, the sides of downs and hills should be inclosed, and live hedges raised, increasing their thickness, and reducing the size of the fields, in proportion to the height of the situation, and dryness of the soil.

Gates.—The gates are mostly of oak, five bars, such as are in general use in most parts of England. Ornamented gates are every where to be met with on the private roads to genteel houses.

In some places, the stealing of gate-hooks and iron fastenings is so common, as to compel the farmer to both hang and fasten his gates with wood, which is easily done, and equally secure with iron.

CHAPTER VII.

ARABLE LAND.

SECT. I.—TILLAGE.

THE *arable land* of this county is, for the most part, confined to common fields. The rest consists of such parts of the said fields, as have lately been inclosed, under separate acts of parliament, as at Stanwell and Enfield-chase; and of a field or two here and there, seldom of more than ten or twenty acres together, in other parts of the county.

All the inclosed arable land is supposed to	}	3000 acres
be under - - - - -		
I have before stated the quantity of com-	}	20,000 acres
mon-field arable land at about - - -		

making together 23,000 acres

of land in aration within this county, or about one-eighth part of the whole; not producing wheat sufficient to supply one-fiftieth part of the inhabitants with bread.

In the operation of ploughing, the ridges are usually cleft every time, in the common-field land (and in the inclosures too, except the second ploughing of fallows and bastard fallows, which is generally done by crossing the former ridges), proportioning the depth of the furrow to that of the topsoil. But in general, the ploughing is deep, and with a wide furrow, which, of course, very much increases the weight or draught, and necessarily requires a strong team, which, moving with a very slow pace, as
all

all heavy teams do, performs but little work in a day. It is not one time in fifty that they go to plough with so few as three horses; but mostly for the lighter work using four; on rather stronger land, five, and sometimes even six: in every instance, drawing at length, or one before the other. In May 1796, I saw, in one day, two teams, with six horses in each, and three men to attend each team, namely, one to hold the plough, and two to drive the horses, ploughing with a wide furrow, about three quarters of an acre per day. Indeed these long heavy teams of horses do not, on an average, plough more than four or five acres in six days; at an expence, to the owners of such teams, of about twenty-seven shillings an acre for one bad ploughing. I have seen a barley soil receive the last ploughing previous to sowing turnips, with a team of five horses, and two men to attend them; and at the same time, a team of six horses in length, with three men attending, were giving the first ploughing to a fallow. A field of mine, of a similar soil, divided from the last only by a hedge, was ploughed by two ponies; while Mr. Logan was ploughing land, even more strong, with two oxen*.

The ridges vary from two feet six inches, to twenty yards, in width†; the former very round; the latter flat. In the common fields they are frequently of a serpentine shape; but in the inclosures they are more straight, and are always laid in the most suitable direction for carrying off the surface water, for which purpose also,

* These expensive teams are encouraged by a too general fondness for fine shewy fat horses, with sleek skins; particularly on the part of the ploughman, who will rob his master's barn and granary for every sort of corn, over and above the regular allowance, to feed the horses with, in order to keep up this useless appearance of parade and shew.—*J. M.*

† The driest soils having the widest ridges, and the wet soils the narrowest.—*J. M.*

water furrows, *i. e.* cross furrows, or what in some places are called grips, are opened by the spade, in order to lay the ridges dry during winter.

OBSERVATIONS.

Ploughing.—Ploughing the soil before winter, enables it to retain an increased quantity of moisture during the following summer; as, on the other hand, every ploughing in the spring and summer, produces a waste of moisture, both by filtration and evaporation. Thus, land that has lain in stubble during the winter, will, when broken up the next summer, plough more dry and crumbly than if it had been ploughed before the winter. In the latter case, it has a similar effect with ploughing it while wet, which of course increases its adhesion, and prevents its crumbling. Hence it follows, that, by a proper attention to the effects of ploughing at different seasons, the husbandman may, in a great measure, be enabled to provide remedies against some of the natural defects of his soil, and render it more suitable to the seed. For example, if the given soil should naturally be too dry, and not sufficiently adhesive, for the growth of any particular plant which requires to be put into the ground in the spring, by completely preparing the soil in the autumn for the reception of the seed, and by putting the seed in without spring ploughing, he will probably cure both these natural defects in his soil; except in extreme cases, when it would be advisable to select a more suitable seed. Again, if the seed to be sown should require the soil to be dry and well pulverized at the time of sowing, the ploughings should be deferred till after winter, and performed as late in the spring, and with the land in as dry a state, as circum-

circumstances will admit. As these are considerations that apply to every plant, and every soil, they should not be lost sight of in the planning of any particular operations.

Steeping.—I am rather inclined to think that most, if not every kind of seed, should be steeped; and that in some poisonous solution, just before it is sowed. This, by cloathing it with the noxious particles, will either preserve it entirely from the attacks of vermin, or destroy such as may taste of it. There can be no doubt, that in every particular dry seed time, seed of every kind ought to be steeped just enough to promote a quick vegetation. This method would, at all times, prevent great destruction by vermin, secure a more uniform growth, and greatly improve both the quantity and quality of barley and oats; and sometimes, indeed, procure a crop of clover, which would, without such precaution, have been lost.

Seed.—The choice of every kind of seed should, as often as possible, be made in the field while it is growing, a short time before it is gathered in. This would in a great degree prevent the imposition sometimes practised, of passing a spurious and bad sort of seed for that of good quality and genuine kind.

Water-furrows.—Immediately after the sowing of every kind of grain, it is proper to open as many water-furrows as may be requisite to keep the land dry, by carrying off the superfluous water. And then to clear all the grassy borders from weeds and rubbish, and to make all the hedges, gates and bars secure.

It is impossible to lay down *general* rules, that will apply with equal propriety to the minutiae of cultivating every *variety* of soil in the most perfect manner; on the contrary,

trary, the modes of culture must be as different as the soils are various. Absolute clay, and clean sand, will of necessity require opposite management. And although there may not perhaps be either of these in a pure unimixed state, yet there is land in every county, and on most extensive estates, which approaches so near to each of these extremes, as to obtain the names of clay and sand; the cultivators of which experience the great inconveniencies attending land of these qualities. In order to till them with any degree of profit and comfort, it is clear that one rule must be adopted for clayey soils, another for sandy land; and it is equally obvious, that a third must be observed with respect to loam, or land equally between these two extremes.

Should agriculture ever be brought to such perfection as the complete cultivation of these three kinds of soil require, it would then be an easy task to form rules for the best and most perfect management of all the intermediate gradations. In order to contribute my mite to so desirable a work, I shall request the reader's attention to the following remarks on the nature and management of several varieties of soil.

Loam.—And first, of a *tenacious, cold loam*, of from eight to eighteen inches, on a subsoil of yellow clay. This soil, from its retentive nature, holds water, even to four times the quantity* most useful to vegetation, until the joint influence of the sun and wind exhales it. A northern aspect is particularly hurtful to this kind of soil, as likewise its being inclosed or surrounded by woods. Low flat situations, small inclosures, and high and broad hedge-rows, especially if they abound with trees, are, separately taken,

* Two and an half times its own weight.—*Bergman*.

unfavour-

unfavourable circumstances, but any two or more of these united, greatly increase the evil. In such cases, the nearer the topsoil approaches to absolute clay, the less productive it will be. When this kind of land happens to be so situated, the water and damp cannot be either sufficiently drained or evaporated, to prevent the redundancy of moisture from chilling and destroying every species of cultivated crop, and substituting a worthless herbage of moss, &c. Under such circumstances, *wood* seems to be its proper appropriation*. But when this kind of soil is situated in a more open country, greatly or entirely exposed to the influence of the sun and wind, and on a southern aspect, it assumes a different appearance, and is of a medium productiveness. Every intermediate situation is more or less valuable, just in proportion as one or other of these circumstances prevail.

With respect to the disposition and management of this soil, it is necessary to observe, that the ditches and drains should be kept open, the hedges closely clipped, and the fields large. Few trees should stand in the hedge-rows, and those should be trimmed to the height of ten or fifteen feet above the surface, while every possible method must be taken to give free access to the rays of the sun, and current of the wind, thereby promoting a perfect drainage and evaporation. Thus circumstanced, it would make good permanent pasture or meadow; and, provided it is in aration, it would be advisable to lay it down to grass with as much dispatch as is consistent with doing it clean and in good heart. This should not be done in one flat surface, as is too frequently seen, but in

* There are a few fields of a clayey soil, having a north aspect, and encircled with wood, in the parish of Cliff, a few miles from Rochester (Kent) that are not worth six-pence each, for any other purpose than the growth of wood.—*J. M.*

a gently waving ridge and furrow, the ridges being about twelve feet wide. So long as this kind of land is continued in aration, the most suitable crops for it are beans, wheat, cabbages, oats, clover and tares. All the several operations of ploughing, harrowing, hoeing, manuring, &c. should be done, if possible, in dry weather, when the soil is rather disposed to crumble. It should also be ploughed, as much as can be done with convenience to the crops, into ridges of not more than three feet in width*.

Neither clayey-marl, nor some of the more strongly cementing-stone limes, should be applied as manures to this soil.

Sandy Land.—The principal defect in sandy land, is that of permitting the moisture to filter through it too easily†; and it is consequently very apt to be too dry. The dressings hereafter mentioned, as applicable to this kind of soil, are, I conceive, the best calculated to remedy this evil.

Very light sands will grow tares, turnips, buck-wheat, rye, &c. Medium sands will grow, in addition to these, barley, clover, wheat, pease, oats, potatoes, carrots, parsnips, &c.

On very dry light sands, it is advisable that the ploughing, harrowing, manuring, &c. should be carried on in damp weather, or even in rain, particularly the last ploughing, and the sowing and harrowing in of the seed‖.

* Ridges of this size are general in the wet soils of Essex and Herts; to which I can add, from my own experience, that their superiority over ridges of greater breadth, for the purpose of draining the water off without washing the land, is incontrovertible.—*J. M.*

† When saturated, it will only hold one fourth of its own weight, or one-tenth of the quantity which a clayey soil will retain.—*Bergman.*

‖ This practice has always succeeded on a farm of dry burning land, called Dunkirk, adjoining the town of Hertford. The Gloucester Report, page 15, confirms my experience in this particular.—*J. M.*

This kind of land should not be disturbed in hot seasons, more than is necessary for the purpose of destroying the weeds, and should always be ploughed level, without ridge and furrow.

The dressings and manures most proper to be used, are clayey marl, mud, loam, neat's dung, hog's dung, &c. Previous to the application of either chalk, lime or gypsum, particular attention should be paid to the nature of the sand. If it should appear to owe its origin to limestone, marble, shells, or other substances that admit of being burnt into lime, the addition of calcarious matter would in most cases be useless. At all events, the application of these substances should be first made on a small scale, in order to ascertain the effects they would produce.

The occupiers of light, sandy soils, possess considerable advantages over the cultivators of clayey land, for all the purposes of aration, both in being able to do their work at much less expence, and in enjoying superior health and comfort, arising from cleanliness and good roads, and from being seldom put to any particular inconvenience by continued wet weather, which is a great hindrance to the operations of a clayey farm.

I shall only further observe, as to sandy land, that as trees and thick hedge-rows greatly increase the moisture of the atmosphere, and tend to counteract the ill effect of drought, all lands that are naturally too dry, should be divided into small fields of three, five, seven, or ten acres each, proportioning the size of such inclosures, the height and breadth of the hedges, and the figure and quantity of the plantations, to the degree of dryness.

Medium Loam—Or that kind of land which is equally between a tenacious loam and sandy land.

In cases where the soil in question approaches rather more towards a sandy soil than the above title sets forth, it would be right to connect the observations on sandy land with the following; and where it approximates more towards a tenacious loam, to connect the observations on clayey land with the following.

Ploughing and harrowing this land, should, as much as possible, be avoided in wet weather, unless the crop intended to be raised should be of such a nature as to require an increase of the degree of adhesion and moisture. If this be not the case, these operations, together with hoeing, would be best performed at such time as the soil is most disposed to crumble.

In ploughing land of this description, attention should be paid to the breadth of the ridges: as it tends towards sand, the flatness and width of the ridges should be increased, in order to retain the moisture; and, on the other hand, as it approaches towards clay, they should be narrower and rounder, in order to promote a quick and certain drainage; observing, that as sandy land should be quite flat, and clayey land, on the contrary, in ridges of two and an half or three feet wide, so loam should partake of the one or other of these shapes, somewhat in the proportion as it advances towards either extreme.

This soil, even when in an exhausted state, will grow winter tares; and provided they are consumed in the field where they grow, it will then produce a crop of turnips. In case the turnips are eaten on the land, it will then be both cleaned and manured in one year, and thereby rendered fit for barley, clover, wheat, &c.

In cases where this land is highly conditioned, that is to say, full of manure and clean, it is calculated for the production of every species of crop, and that in abundance, with the exception, perhaps, of parsnips carrots.

Every

Every possible variety of manure, except clayey marl, may be applied with advantage.

Marsh Land—Consisting of either river or sea sediment.

Land of this description should be entirely undisturbed during wet weather ; and may be worked in every season when it is dry. The ridges should be made narrow, as before described. But this land should, wherever circumstances will permit, be in a state of grass. Old pastures and meadows should only be broken up, and put into a course of aration, at such time as the herbage, being visibly impaired, makes such an operation necessary for the purpose of restoring it. It should then be ploughed only once, which will be best performed by two ploughs, one following the other ; the first barely paring off the old sward, and the other turning up the mould, being careful not to go so deep as to bring up any soil of an inferior quality. When this is done, it will, without further trouble, be in a proper state for the reception of grass seeds.

Peat Earth.—It often happens, that a few inches of this soil is to be met with on loam, clay, &c. In such case, the best method is to pare and burn the topsoil ; and then plough sufficiently deep to get as many inches of loam, or half as many of clay, and the land will be very productive, after being limed.

It is also frequently found from one foot to three in depth ; and may then be repeatedly ploughed, dried, and burnt to ashes, until it be reduced to such a degree of thinness, as to admit of the plough turning up a few inches of the subsoil : after being limed, it will be astonishingly fertile.

Again, in case the peat should be particularly thick, it may, after being drained dry, be reduced to ashes; generally by only putting fire to it, without the trouble of paring, ploughing, or digging; after which, if ploughed up with some of the subsoil, it will become of the first degree of richness.

I would by no means advise a total destruction of all the peat. On the contrary, it would be prudent to reserve two or three acres on every farm that may happen to be so fortunate as to possess such a fund, for the purpose of keeping up a supply of ashes to dress the adjoining lands.

In situations where the difficulty to reduce all the peat into ashes, as before observed, would be considerable, supposing it to be dry, the surface might be pared, ploughed or dug, and then burnt into ashes. After this, it should be limed pretty plentifully, but with discretion, which lime, and the ashes, should both lie on the surface till they and the land have been soaked once or twice with rain. It will then, very often, be advisable to sow white clover, and other grasses, without any ploughing at all. (See Dr. Anderson's Report of Aberdeenshire, page 105; and also an experiment of the Rev. Mr. Cook's, in the section on paring and burning, in this work).

That this soil may be ploughed, and improved by lime and ashes, so as to change the land into a kind of black loam, producing immense crops of potatoes, turnips, clover, &c.—see the Report of Merionethshire, pages 10, 12, and 13.

As to a method of cultivating this land, by planting it with potatoes in the lazy bed manner; sowing oats after the potatoes, with grass seeds for meadow; and after the first crop of hay, liming the land—see East Lothian, page 81; Dumbarton, 52; and Perth, 98.

In

In cases where, from the situation of this land, it is capable of being flooded and laid dry at pleasure, it should be properly disposed as to shape, carriers and drains, previous to the spreading of ashes and lime; after which grasses and clover should be harrowed in as aforesaid. (See Merioneth, p. 10).

SECT. II.—FALLOWING.

IN the parish of Heston, where the best wheat in the county is said to have been long grown, fallowing is not in use.

In the strong land district, westward of Harrow, where the old course, which had been established from time immemorial, included a fallow every third year, the farmers have copied the much better practice of their neighbours at Heston, and in 1796 there was only one field in Riselip, and another in Alscot, which were in fallow. Indeed there were a few acres of land in one of the other parishes, belonging to a pupil of the old school, in what he called a fallow, which had more than half a crop of weeds growing on it, and formed a very striking contrast to the lands of his neighbours, who had crops of peas, perfectly clean, growing upon theirs.

Fallowing is totally excluded from the land south of the Colnbrook road, and hoeing crops are generally substituted.

On the east side of the county, as at Edmonton, &c. the old course included a fallow, as before mentioned, which, however, is now very properly beginning to make way for crops of turnips and potatoes. On the whole, I have good reason to think, that the idea of giving rest to land, is now

exploded in every part of the county, except in Riselip and Alscot; and even there, I have no doubt but that the superior crops, and evidently higher profit of their neighbours, will soon convince them that the raising of clean, smothering, green crops, and feeding stock with them on the land, is not only much more profitable, as far as relates to the value of the crop substituted in lieu of a fallow, but is also the most effectual method of procuring large crops of wheat, or any other corn, which may succeed the green crop.

Before the introduction of green and root crops, fallowing was universal, and was in a great measure indispensable, for the purpose of cleaning the land. All the young farmers of that time were brought up in the constant habit of seeing the weeds destroyed, and the land recruited, by means of fallowing, and they could not suppose it possible to accomplish that object in any other way. This, however, was the certain means of keeping themselves poor, and consequently their offspring ignorant, as it put it out of their power to bestow on their children a proper and useful education. *Great part of the arable land of this kingdom lying in common fields, the mode of cultivating which is marked out by the law, it was of no use whatever for the farmer to attempt to vary from it. Thus imperiously controuled, he had no object to exercise his thoughts, and the system of his father, from the influence of habit, became a part of his nature.* It is therefore not a matter of much surprize, when seriously considered, that farmers should have been found so peculiarly tenacious of old practices, or that there should have been so much difficulty to introduce among them new plants (as clover, turnips, &c.) new implements of husbandry (as two-horse ploughs, &c.) or new courses of crops, but more especially to do away fallowing. Farmers in general have now survived the
mediocrity

mediocrity of their former situations, and their children, in consequence, are better instructed. The shackles and restraints of old courses, and obsolete systems, are in a great measure destroyed; and reflection and exertion substituted for supineness and confidence. Thus *every new and promising matter on the subject of agriculture, will now probably receive due attention and regard, and be fully experimented in most parts of the kingdom.*

SECT. III.—ROTATION OF CROPS.

THE old rotation on the *east* side of the county, is wheat, barley, fallow; the last, indeed, is now giving place to clean crops of potatoes, &c. In the neighbourhood of Heston and Norwood, *the course is, wheat, beans, peas; the two latter twice hoed, and earthed up at the last hoeing.* This is certainly a very excellent rotation *.

On the *strong land district*, between Harrow and Uxbridge, the former rotation was, wheat, beans broadcast, then fallow. But of late years it has been the practice *to dibble the beans in rows of about fifteen inches apart,* and to hoe them twice. The fallow is very properly superseded in all the parishes, except Riselip and Alscot,

* "The land about Heston consists chiefly of a strong loam, and is celebrated for producing the finest wheat in the county; the skin is thin, the corn full and bold, and the flour white, or, as the millers term it, fair."—*P. F.*

Of which place Mr. Camden tells us, "that the wheat bred there made such delicate flour, that our kings in ancient times made choice of it, particularly for their own bread, and the use of their own tables."—*Magna Britania.*

Much of the soil at Heston, Cranford, Norwood, &c. is a most highly productive loam, possessing that happy medium of texture which fits it alike for the production of every kind of corn, pulse and root, and its staple is five or six feet in depth, on a bed of gravel.—*J. M.*

by peas in rows of fifteen inches apart, which are twice hoed, and both peas and beans are constantly earthed up at the last hoeing.

Through the *light land district*, between Longford and Sunbury, the arable land is usually cropped in the following way, viz. wheat, barley, drilled hog-peas, twice hoed; a few acres of beans, and two or three acres of tares. Then wheat, barley, and, lastly, clover; which is mown twice, and coming only once in six years, is generally a great crop. But four corn crops in six years, are certainly too severe for this, or almost any other land, especially when it is considered that part of the hay and straw is sent to the London, and other markets, from every part of this district. On the other hand, it must be owned, that the quantity of dung collected from the inns, &c. at Brentford, Hounslow, Staines, and other places, is so very considerable, that it will necessarily assist in supporting the land under this great degree of exhaustion.

In this tract of land, the ridges are generally from ten to twenty yards in width*.

“ The rotation of crops in the district of Chiswick, is,
 “ the first year vetches for spring feed; or peas, or beans,
 “ to be gathered green; then turnips. On inclosed land
 “ they are not fed, but sold to, and drawn by, the Lon-
 “ don cow-keepers. Second year wheat; third year bar-
 “ ley, or oats. But before the pulse is sown, and also
 “ between the wheat and barley, the land is well ma-

* “ In the district of South Mims, which consists of a wet soil, or thin cold clay, the system of husbandry is, 1st, summer fallow; 2d, wheat; 3d, beans, horn grey peas, or oats; manure well after, then, 4th, summer fallow. On the lighter and better parts, bordering on North Mims (Herts) 1st, turnips, on a summer fallow; 2d, barley, with broad clover. Clover should not be sown on strong land, as it makes the land very foul, and it requires a remarkably dry season, with good husbandry, to get it clean.—
Note from one of the returned Reports.

“ nured.

“ nured. The farmers of this district cannot grow clover,
 “ on account of the Lammas tenure incident to common
 “ fields. It also obliges them to submit to the expence of
 “ an extra manuring, to pursue the foregoing order of
 “ cropping; and that this extra dressing does not recover
 “ the land equal to what clover for one year would do.”—
 (*Foot's Middlesex*).

However, the farmers of Shepperton, Sunbury, Littleton, &c. shew us that clover may be grown even in common fields, though certainly only to the very small extent of so much of them as they are able to spread dung over, to preserve it from the bite of sheep, &c. (See clover).

GENERAL OBSERVATIONS.

THE *rotation of crops* is, perhaps, one of the most important subjects that can occupy the attention, or exercise the ingenuity and skill, of an agriculturist*. It has hitherto, no doubt, been too little attended to by almost every cultivator, but I am happy to say, that it will now, most probably, receive that consideration and attention which its importance so justly claims: since, from the exertions of the Board of Agriculture, assisted by the information received from many intelligent individuals, we may reasonably expect that such well-digested rotations of crops, for every species of soil, and suited to every situation of climate and local circumstance, will be drawn up, and generally disseminated by the Board, as will not fail to be immediately adopted by the more enlightened part of the agricultural world. Their example, no doubt, will speedily

* Mr. Billingsley, in his *Somerset*, page 181, says, “ This I conceive to be the most prominent feature in good farming; and if it were generally adopted, would increase the produce of the land three-fold.”

be followed by every farmer of understanding, and who has his own and his country's interest at heart.

The aggregate benefits that will be derived to the country from this measure, are not to be estimated: but among the first of these, will stand *the abolition of fallows*, and the introduction of *green crops* to supply their place, over an extent of *about three millions of acres of arable land* which have hitherto, under the fallow system, produced nothing useful during the fallow year. So far as tares and turnips, or potatoes; or peas and turnips, or potatoes; or any *two good crops*, can be raised in one year, in place of a fallow, the produce will be *double* in quantity, what it has been under the former system*.

The farmers of Heston and Norwood have much merit, in setting an example to their brethren, of *good farming*, in taking *two green and hoeing crops* to one crop of *corn*. It is from such close attention to the clean cultivation of their land, and from their preserving its vigour, by growing only one corn crop in three years, that the corn produced in that district is so much superior to that of others. It is not only of the first quality, and fetches the highest price, but, what is of some importance, it has gained a name, and is therefore more in esteem than any other in the county. This is now no longer the practice of a farm or two, but of a district, that has, within the last seven years, extended itself over most of the strong land between Uxbridge and Harrow (an extent of about six thousand acres). I do not know of a better rotation for strong land in *common fields*; though for *inclosed*

* There are about nine millions of acres in England and Wales, in the course of two crops and a fallow; *i. e.* six in crop and three in fallow. Hence it follows, that by procuring *one* crop in lieu of the fallow, fifty per cent. is added to the former produce. But so far as *two* crops can be obtained, in place of a fallow, it adds 100 per cent. or double the former number of acres of produce.—*J. M.*

land of the same texture, I can recommend a more profitable one from my own practice, viz. the first year winter tares (the land previously manured); then bastard fallow for oats in the second year; the third year clover; the fourth year wheat*. Perhaps, indeed, a combination of the two courses would be better than either of them alone; as for instance, *the first year winter tares (the land, as before, previously manured); second year oats on a bastard fallow; third year clover; fourth year peas; fifth year beans; sixth year wheat.* In this course there are four green crops to two of corn; and as the same crop is only repeated every sixth year, and the course evidently calculated to keep the land perfectly clean, there can be no doubt but that the crops would all be abundant. It may be observed, that the pea and bean crops would bring the least money. But as they should both be invariably hoed twice, the land would thereby become so clean, and well prepared for the wheat crop, that I cannot too much recommend this course for such kind of land†.

The course of crops which I have already stated as the practice of the *light land districts* in this county, are doubly exhausting; first, from the order in which they are placed (as barley after wheat); and, secondly, from the encouragement which they afford to weeds. Here it is both just and necessary to observe, that *a perfect system of husbandry is not possible in common fields, from the circumstance of the almost total exclusion of turnips and clover.* The present imperfect system of crops are very evidently to be

* Or it would be an exceeding good rotation, if the corn crops were reversed: it would then stand, 1st, tares; 2d, wheat; 3d, clover; 4th, oats.—*J. M.*

† The London Society of Arts, &c. in the winter 1794-5, honoured me with a Medal, as a mark of their approbation, for my letter on the cultivation of clayey land, which is published in the 13th vol. of their Transactions; to which I beg leave to refer.—*J. M.*

attributed

attributed to these fields being in common, and an *effectual* remedy can only be found in the *inclosure* of all such fields. Till this is effected, it would be an *improvement* to pursue the following method, namely, *the first year barley; second year clover, at least on as great a portion of land as dung sufficient can be got to spread over it, so as to preserve the plants from the bite of sheep; the rest peas, in drills twice hoed, and earthed up at the latter hoeing; third year wheat; fourth, potatoes or spring tares.* The potatoes should, in this case, be planted sufficiently early to admit of being taken up soon after the time of turning cattle into the fields.

This land being near the *London dunghills*, with the advantage of water carriage, there is no doubt but that, with a liberal supply from *them*, it would bear these crops well.

Corn unquestionably exhausts the fertility of land in a very great degree; of course an unremitting continuance of corn crops would necessarily destroy the fertilizing principles of the best land; and hence it follows, that the poverty of any soil will be just in the proportion of the number of corn crops it has produced. The great evil is, that farmers in general are particularly anxious to have, as much as possible, their land in corn*. Many of them sow wheat, even during so long a time as the land will return a crop equal to the seed sown: then barley, and afterwards oats, in constant succession, till the land, wholly wearied out and exhausted by such treatment, refuses to grow any thing but weeds. It is then suffered to rest, and when it has in some measure recovered itself, by the influence of the atmosphere, and by the dung of young stock, which its worthless herbage barely keep from starving, it is, towards the conclusion of their leases, again subjected to the scourge of corn growing, without mercy.

* This observation applies more properly to the farmers of other counties, than to those of Middlesex.—*J. M.*

The printed Reports of the several counties, evidently point out the poverty and wretchedness consequent on an exhausting course of crops; which must arise from the rapacity of the tenants, on the one hand, and the neglect or want of skill of the landlord, on the other. Indeed, *most of the ley land of this island exhibits a picture of starvation, in consequence of its having been cropped with corn so long as it would bear any.*

Throughout the west and north of England, the farmers are too generally negligent in arranging their course of crops, with the exception of a few solitary instances, one of which is the northern management of turnips and potatoes, which may be commended. A landlord giving his consent that a farmer shall plough up any particular field of grass land, may very generally be considered as signing its death-warrant previous to delivering it over to the hands of the executioner*.

In corroboration of my own experience as to these facts, I shall quote a passage or two from the Reports of the Welsh counties:

“The Anglesea method of cropping land, naturally extremely fertile, with wheat and barley alternately, brought on the necessity of giving up wheat: barley and oats were next grown alternately, which in a short time sickened the land of barley. Then, as a last resource, oats after oats, till it would not bear them. This county has in general been thus left to keep some young cattle from starving; and the inhabitants, in their turns, are as impoverished as the land. Indeed it was to be expected,

* “Nor is the land sown with artificial grasses till it is no longer able to bear corn.”—*Somerset*, p. 75.

“Ten successive corn crops.”—*Wilts*, p. 65.

See also Worcester, Appendix, p. 13. Carmarthen, p. 12. Cardigan, p. 10; and Radnor, p. 13.—*J. M.*

“and

" and they have literally exchanged or given the wheaten loaf for the barley or oaten cake."

Mr. Hassell also, in his Report of Carmarthen, says, " that the people have impoverished the soil; and the soil, " in its turn, has impoverished them, and amply revenged " the wrongs it suffered by the farmers. Put a sloven " upon ever so rich a soil, in ever so good condition, let " him impoverish his farm, and I will answer for it, the " farm will pay him back in his own coin, and im- " poverish him, unless he runs away from it.

" Leaving farmers at liberty to crop the lands, every " farmer after his own manner, would most rapidly reduce " all the lands in Great Britain to a similar state of " wretched poverty."—*Carmarvon*, p. 12.

A few instances of good farmers acting in opposition to a general spirit of deterioration, would have very little effect.

Land under common circumstances, will not even bear, without injury, a corn crop every two years. All the accounts of Norfolk are uniform, in saying that their turnip crops are less certain, and much lighter, than they used to be. The same observation applies to clover, and probably to the corn crops. This falling off in the produce, proves that their favourite (and valuable) rotation of turnips, barley, clover, wheat, is rather more than the land can sustain, which is gradually suffering under too great a degree of exhaustion*. Even with the assistance of extensive

* The writers on rural economy have, very improperly, extolled the general husbandry of Norfolk, from the single circumstance of a few persons in that county having adopted the rotation of turnips, barley, clover, wheat; and have therefore presumed to call it the *Norfolk husbandry*; which is contrary to the fact, as *that* rotation is not the prevailing one of the county, though many intelligent individuals certainly do follow it in Norfolk, as men of the *same* description do in other counties: but I have never met with any thing like a proof, that this valuable rotation was first practised in Norfolk.—

sheep-walks, the soil is not able to bear up against the weight of its present course of crops; more especially when a five years course is erroneously adopted, by introducing barley after wheat. On this subject Mr. Kent is quite mistaken. (See his Norfolk).

The interests of the *community, and of the landlord*, may be said to be *permanent and similar*; while those of the *tenant are temporary*, and consequently in opposition to the former.

The very nature of *the tenant's* precarious interest in the soil, is powerfully calculated to impel him to *draw the most he can from the land* during his lease; and which can only be done, by cropping it in a way that *it cannot possibly sustain in perpetuity*.

To this source we may undoubtedly trace the cause of the poor and exhausted state of many farms, at the expiration of the leases, in every part of the kingdom.

When the commons, downs, and sheep-walks are inclosed and cultivated (as in a few years they must be), the old inclosed lands will, in consequence, be deprived of the manure deposited in the sheep-folds, which they now derive from those wastes. It will then very soon be found, that *the wiser way*, if not absolutely necessary, *will be to grow two green crops for one of corn*, as is now practised over six thousand acres in this county, with complete success.

With these ideas impressed on my mind, *I venture to recommend for the best land, alternate green and white crops. For land of a full medium quality, three green crops for two of white; for ordinary land, two green crops for one of corn; and for the worst, or most exhausted, land, downs and sheep-walks, three green crops to one of white.*

Cropping land in the foregoing ratio or proportion, would keep it free from weeds, and in a high state of cultivation;

tivation; and *under such management, might be continued in perpetual aration, with a constant succession of large products.*

The farmer, by adopting this system, would not be vainly flattered by *a promising seed time*, and miserably disappointed by *a scanty harvest*, as is now frequently the case: on the contrary, he might be sure (at least so far as depends on human means) of reaping a plentiful return for all his labour and expence.

The following order of crops will evince, that it is perfectly easy to arrange several rotations, from two to five, of green crops, to one of corn, viz.

1. Two green crops to one of corn.

Corn,
Clover,
Peas;

Or, Peas,
Beans,
Corn.

2. Three green crops to one of corn.

Corn,
Clover,
Tares,
Turnips,

which is four crops in three years;

Or, Corn,
Clover,
Peas,
Beans.

3. Four green crops to one of corn.

Tares,

Potatoes,

Potatoes, or cole, for sheep-feed,
Turnips,
Corn,
Clover,
making five crops in four years.

4. Five green crops to one of corn.

Peas,
Beans,
Corn,
Clover,
Tares,
Turnips,
making six crops in five years.

Irregular Crops.—When seeds fail, the farmer should sow tares or turnips, or both, or any root or green crop, but not corn.

I shall now take the liberty of offering to the attention and consideration of farmers (especially the owners of barley soils), the following crops, nearly in the order in which I have placed them, and *as calculated to supply a continued succession of green food, of the best quality, in abundance all the year round, namely,*

Water-meadows,
Rye-grass,
Rye, cut green,
Winter tares,
Clover, the first crop,
Spring tares,
Clover, the second crop.

After-grass of meadows; clovers, and seeds of all sorts.

Turnips,

L

Cabbages,

Cabbages,
 Potatoes,
 Cole,
 Swedish turnips,
 Turnip-rooted cabbage*.

As auxiliaries may be added, bran, pollard, oil-cake, linseed, &c.

Whoever will attend to the raising of the foregoing crops, on a scale proportioned to the size of his farm, and the number of his *live stock*, need not be straitened from want of food for *them*, at any time or season of the year. It is evident on a bare inspection of the list, that, considering the properties of the different plants, and the seasons when each of them are the most fit for use, they complete the circle of the year. It may perhaps be started as an objection, that many farms are without water-meadow—very true; but then cole, Swedish turnip, and turnip-rooted cabbage, might be produced in such quantity as to be sufficient for consumption in March and April, during which months, and part of May, they are in the highest state of perfection. These might be assisted, or even superseded, by turnips, potatoes, carrots, parsnips, and even cabbages, all of which being gathered while in the greatest perfection, might be laid up in store pies, both with or without frost or snow, for spring use†. Water-meadows afford a vast deal of food from the middle of March‖; rye-grass from the first of April; rye from the beginning of May; winter tares soon

* Report of Kent, page 104; Report of Gloucester, page 28; and Transactions of Society of Arts, &c. vols. i, ii, iii, iv, vi, vii.

† It is presumed that these roots, &c. might be preserved in pies, among ice and snow, until late in the spring, and then used.—*J. M.*

‖ See Report of Wilts, by Mr. Davis.

follow;

follow; then comes clover, the first crop; spring tares; clover, the second crop; and the after-grass of natural meadows, clover, &c.; which will continue in perfection for heavy cattle till early sown turnips are ready. Later sown turnips and cabbages will be sufficient till the end of February, without storing; about which time the cole, Swedish turnip, and turnip-rooted cabbage, will come in, and continue good through March and April, and even May, if needful. All these, more than complete the circle of the year*.

There are several farmers of this county, who have a field or two near their houses, of a few acres each, cropped *one year with winter tares, then turnips, and the next year wheat*; thus obtaining *three valuable crops every two years, averaging a produce of fifteen guineas per acre per annum.*

If this system could be extended to a whole farm, and thence over the nation, what a wonderful scene of fertility would this island exhibit! The entire kingdom, undoubtedly, could not be so cropped, but most of the light, dry soils, are perfectly adapted to this mode of culture, even in places the most distant from dunghills. Provided the tares and turnips were one or both of them eaten on the land, a continual productiveness might be ensured. The cold clayey loams are exceedingly well calculated for the alternate growth of tares and wheat, or, which is still better, of wheat, clover, tares. The former rotation would, in this county, average eleven guineas, and the latter twelve guineas per acre.

If it were either necessary or advisable; *clover, tares, turnips, &c. might be grown and consumed on the land, until*

* The foregoing system entirely removes the time of scarcity with improvident farmers, or *Mr. Kent's interregnum* between winter and summer.—
J. M.

it became too rich for wheat, in which case it might be laid down to grazing pasture, or again depreciated by the growing of oats.

I have dwelt rather long on this subject. I trust that the reporters of other counties will handle it much more ably. In my opinion, it is the *soul* of good husbandry, and the most effectual means of supporting, and making fat, an increased number of cattle and sheep.

SECT. IV.—CROPS COMMONLY CULTIVATED.

THE corn cultivated in this county, is nearly confined to wheat and barley; rye and oats are grown only in very small quantities.

The green and root crops commonly cultivated by the farmers in Middlesex, consist of a very considerable variety, viz. beans, peas, turnips, cabbages, yellow clover, white clover, red clover, cow-grass, red honey-suckle clover, rye-grass, rye cut green, tares, barley and oats mixed with tares, for the use of cattle: turnips, potatoes, carrots, parsnips, green-peas, and beans, for the use of man. Lucern and buck-wheat are occasionally grown, though on a very small scale. No instances of the cultivation of hemp, flax, rape, turnip-rooted cabbage, sainfoin, chicory, burnet, meadow soft grass, ribwort, timothy, &c. within this county, have come to my knowledge.

An extensive cultivation of the foregoing crops for the use of cattle, is the most powerful of all means that can be devised, for the support of an increased quantity of live stock; the cheapest and readiest way of raising mountains of manure; and,

and, of course, the most certain means of enriching the land, which generally makes wealthy farmers.

The vicinity of the London markets certainly render potatoes, carrots, and parsnips, too valuable in this county to be profitably employed in the feeding of cattle; but in places more distant from the metropolis, where these roots sell but for little money, they might be very advantageously cultivated for the use of cattle. Being added to the foregoing list of green crops, stated to be grown in this county for that purpose, would make four green crops to one of corn; that is, if they were grown in such a manner as to include the whole, which would advance the fertility of land to such a height as to exceed all former precedent. I think, therefore, I cannot too strongly recommend this practice to farmers in general.

Changing the seed of corn every two or three years, is a practice which prevails almost generally. It is done at an extra expence of from six-pence to one shilling a bushel on wheat, and half those sums on other grain. This practice is as little founded on propriety, as a change of live stock once in every two years would be, and never will be the means of advancing corn to a high pitch of excellence. On the contrary, when corn farmers become wise enough to apply Bakewell's method of improving cattle, to the raising of seed grain, the advance will be rapid indeed, and its improvement will go on towards the mark of perfection, in a degree which, in the present state of things, can scarcely be conceived.

The method I wish to recommend to those cultivators who desire to excel in the article of grain, is the following, namely, a few days before harvest, to walk through their fields of corn, to select and gather the prime samples of every species of seed, and ever afterwards to continue the same practice, by repeating the operation of

collecting the most perfect grain from the crops produced from such selected seed.

The same observations apply to every variety of cultivated crop.

I. W H E A T.

THERE are about 7000 acres of land annually cropped with wheat in this county.

1. *Preparation.*—When this crop succeeds beans, peas, or tares, the land is ploughed (which should be done as shallow as possible), the roots and weeds harrowed out, raked together, and burnt in heaps. The land is then re-ploughed a few inches deeper, into proper ridges, for the reception of the seed. In some instances, it is harrowed after the second ploughing, and ploughed a third time; and the seed is frequently ploughed in with a very shallow furrow, on such third ploughing. It is rather a general practice, for half the seed of wheat to be turned in by the second or third ploughing; and for the other to be afterwards harrowed in. There are some few persons who plough only once*.

* A gentleman remarks, in one of the returned Reports—"That the farmers in the neighbourhood of Riselip and Pinner, seldom if ever plough their land over-athwart, and for want of so doing, they rarely obtain a good sweet tilth to sow their wheat in. And that they do not cut water-furrows sufficient across their heavy clay lands, to take the water quite off the wheat, &c." This is the necessary consequence of the land lying in common fields, as it is well known the farmer cannot *cross plough* his land without drawing over his neighbour's land, which he is not entitled to do; and the same obstacle prevents the water-furrowing from being properly executed, as the farmer cannot extend it beyond his own land. In the inclosures, ploughing and water-furrowing are, for the most part, well managed.—*J. M.*

When

When wheat comes after clover, the ground is ploughed only once, in doing which, some farmers make use of what is called a skim coulter*, which, putting the grass and weeds to the bottom of the furrow, where many of them are smothered, makes the land harrow better, and look cleaner than it really is; though, in point of good husbandry, when the clover crop leaves land foul, wheat should not be sown (owing to its remaining so long on the ground as to allow the weeds time to mature their seeds), but some hoeing crop instead of it.

The old doctrine of fallowing and manuring for a wheat crop, which almost universally prevailed at one time, is now very justly exploded; and the much better practice of sowing wheat on breaking up a clover ley, or after a clean crop of beans, peas, tares, rape, hemp, flax, potatoes†, or turnips, now prevails with every man of superior skill in agriculture.

Wheat should never be sown after rye, barley, or oats; nor should the land be manured for it, but for the preceding crop.

2. *Sort.*—Generally, new grain recently thrashed, is preferred for seed. Thin skinned grain is supposed to

* That is, a common coulter, with a fin and turnplate rivetted or screwed to the off side of it, about four or five inches above its point. Thus equipped, the coulter skims off the remains of the clover and grass, and turns it into the bottom of the furrow, and the plough instantly follows, and covers it in. The field being ploughed in this manner, looks cleaner, and harrows much better, than it does when ploughed in the usual way. An adequate idea of this operation may be formed, by comparing it with two ploughs following each other in exactly the same tract, as the effect would be the same. In every case of this kind, when the plough turns up a sufficient quantity of mould, it will smother the weeds, and leave the land clean.—*J. M.*

† “In a cold climate, and on a light soil (says Mr. Billingsley very properly), I should not by choice sow wheat after potatoes; but should plough the land into seed ridges, and leave it through the winter; and in the spring sow barley and clover.”—*Somerset Report*, pages 10 and 19.

yield the most meal, and therefore wheat possessing that quality, and weighing the greatest number of pounds to the bushel, is in the most esteem, and will sell for the highest price, whether red or white.

3. *Steeping*.—Both brine and urine mixed with lime, are used for this purpose. I have *prevented the smut* in wheat, by putting lime, recently burnt, into a copper of boiling water, and pouring this mixture, boiling hot, on the wheat, previously spread on a stone floor, immediately turning the wheat and the mixture well together with shovels. This is always done over night, and the seed sown the next day; though, in the case of wet weather, I have known seed thus prepared remain a week before it was sown, without injury. *The heat of the water, aided by the suffocating smell of the fixed air discharged from the lime, seems to be sufficient to destroy the animalculæ, to which some ascribe the smut, and also to coat the wheat so as to become a preservative from vermin.*

For further reasons in favour of steeping seed grain, see chapter vii, section 1, tillage.

4. *Seed*.—The quantity generally sown on an acre, is nearly three bushels.

The quantity of seed, however, should vary somewhat with the quality of the land and the time of sowing; a poor soil requiring more seed than a rich one, and a late season requiring more seed than early sowing. On every kind of land, the broadcast method requires a larger quantity of seed than if it were drilled. At Michaelmas, two bushels and an half of seed is the most advantageous quantity for sowing broadcast on a medium soil, and to this add a gallon of seed for every fortnight later.

5. *Time*

5. *Time of Sowing.*—It is usually sown during the months of October, November and December, in the order in which the land is got ready ; though the greatest breadth is sown in the month of October. In the case of sowing it after turnips, &c. it is sometimes sown so late as January and February ; but October is thought to be the most promising season : of course, all the land that is then ready ought to be sown* †.

6. *Culture while growing.*—In the spring, much of it is hoed, the thistles cut out by hooks, and when black grass abounds, it is sometimes drawn up by hand.

When a dry spring succeeds a wet winter, it makes the surface of strong land *so very hard as to prevent the new, and uppermost roots of the corn from freely penetrating into the soil.* This is discovered by the corn turning of a sickly yellow, and may, and ought to be, *prevented by harrowing once or twice in a place,* and perhaps immediately rolling all such land as shews itself to be too hard.

The same operation is generally advisable, on the sowing clover or grasses among wheat, to ensure their vegetating.

In case it be suspected that the land is *not sufficiently rich* to bring a full crop to perfection, *sow top dressings, or shower it with the drainings of dunghills,* and immediately after harrow and roll. Let this be done as early in the

* " Twenty acres sown the middle of March, 1796, after turnips were carried off, turned out a good crop—sort, the red chaff, with white grain."—*Mr. Jenkins.*

† " Seven acres sown the last week in February, 1796, after turnips and peas the preceding year, yielded twenty bushels per acre."—*Mr. Head.*

" Every barberry plant should be destroyed, whether they stand in hedges or not, or they will blight wheat in the direction of the wind, to a considerable distance."—*Annals of Agriculture.*

spring as the land is sufficiently dry to bear the treading of horses without poaching.

In 1794 I top-dressed twenty acres of a clayey soil, great part of it with soot, and the rest with Newbery peat ashes, and sowed clover with these dressings, immediately before the operations of harrowing and rolling. The crop did not receive any perceivable benefit from those dressings, but the summer turned out remarkably dry, which was certainly against such manure. *However, the harrowing and rolling secured the clover*, which produced two plentiful crops in 1795.

When worms or slugs are perceived to attack wheat, it is usual to turn a flock of sheep into the close, and some persons send a boy with a dog to drive them about, in order to tread many of the vermin to death, and to fix many more of them in the ground to perish.

After a frosty winter, the *crowns of the roots* of wheat are sometimes exposed for two or three inches in length above the mould; in that case, turning sheep in after a moderate shower, and driving them about, will tread the wheat into the moist ground, where it will abide, and produce fresh roots.

Future experiments, I believe, will determine the comparative merits of the drill and broadcast methods of growing wheat, on light soils that are clean, in favour of the drill, owing to the single circumstance of earthing up the plants just before the shooting forth of the last set of roots, which arises from a knot in the stem of the intended straw, above all the other roots; generally above the surface of the ground, which they frequently find a difficulty in penetrating. By raising the mould against the stems, more than one knot may throw out roots (as probably *all* would do, if the mould should be raised to cover them), which

which will succeed, and of course afford a plentiful supply of nourishment to the crop; perfecting the otherwise weakly stems, and filling the ears with grain*.

On strong loams and clayey soils, however, if they are ever so clean, and on all lands that are foul with root-weeds, it does not admit of any argument to support the superiority of the broadcast over the drill. In the latter case, the drills cannot work; and in the former, the horse-hoes must be equally at a stand. The harrowing and rolling of strong land, aided by the usual operation of weeding, and, if needful, with top-dressings, will be found to promote the growth of the corn; whereas the horse-hoes in such a soil, in a dry season, would have so unsteady a motion, as to cut up part of the rows without being able to raise any mould towards earthing up the plants.

A wet summer, especially when there is much rain during the time *wheat is in blossom*, produces a deficient crop, and occasions high prices: on the contrary, a dry summer, particularly when it is without any rain while the wheat is in blossom, brings plentiful crops, and at low prices.

7. *Harvest*—Commences about the first week in August, and becomes general all over the county in the se-

* The advantage of earthing up wheat, where it can be done, was fully exemplified during the summer of 1796, in a piece of springy loose gravelly soil belonging to Mr. Robinson, of Wyck-house, which had been ploughed into one bout ridges, each ridge and furrow about two feet in width. On these he dibbled three rows of wheat, and had them repeatedly cleansed and earthed up: the effect on the crop was what might be expected—straw like reeds; and, when compared with some other rows adjoining the former, drilled and cultivated in a different manner, they were visibly three or four times more bulky; but in the latter case too much seed had been sown, which every farmer knows, has the certain effect of producing thin straw, small ears, and altogether plants of a dwarf size.—*J. M.*

cond or third. Rye is the first; oats generally the second; wheat the third, and closes with barley in about a month.

Reaping is nearly all done with a toothless hook of about twice the weight of a common sickle. It is sharpened as often as occasion requires, in the same manner as a scythe, and the operation of reaping is performed by cutting the crop down by a succession of blows, made within two or three inches of the ground. This the farmers call *bagging*: the reaper collects enough for one sheaf at a time; binds, and sets it up in tens, called a *shock*. The *bagging* is, to all intents and purposes, mowing with one hand against the standing corn. The scythe is never applied, though repeatedly tried: the workmen have never seen wheat mown against the standing corn, as practised on the borders of the Tees, neither are they desirous of abridging labour. However, by *bagging*, the straw is cut much closer to the ground than is possible to be done by hand reaping; it is equally expeditious, and secures an increased quantity of straw, which is worth perhaps 7s. an acre in this county.

The reaping (or *bagging*) is generally begun as early as possible; that is, two or three days before the corn be quite ready, in order to secure labourers, and to gain an extension of time. It is observable, that the first reaped makes the fairest sample. The whole, indeed, comes forward so rapidly, as frequently to be too ripe before the harvest is over. It sheds in harvesting, from two to five bushels per acre, when thus over-ripe. If it be clear of weeds and clover, it is frequently carried to the barns on the same day. In common cases, and promising fair weather, it is suffered to stand in the field from five to seven, or more days, which is said to promote its thrashing more freely and clean

On

On sandy and rich land, the wheat, as soon as it is cut and bound, may be moved to every third, fifth, or seventh ridge. The land may then be ploughed once, and sown with turnips or with winter tares. In some cases, it is advisable to sow turnips among the wheat soon after Midsummer, or rape may be sown in September. I have known red clover seed harrowed into the wheat stubble after harvest, on strong land, but it did not succeed. In some cases of very rich and light land, it may, however, be worth trying.

To the westward of the city of Bath, the excessive moisture of their climate has necessarily induced the occupiers of arable land to secure their corn in the field (immediately after it is bound) in round ricks, containing about a cart-load each, placing the sheaves in such a manner as to secure the ears equally against the rain, and damp arising from the ground. Every sheaf, from the eves upwards, is placed sloping in a thatch-like manner, and in the form of a cone. One sheaf is inverted, and spread over this cone-like point; this method secures the whole, until it suits the farmer's convenience to carry it to his barns or stack-yard. When these ricks are well made, they are secure against every possible quantity of rain, and for any reasonable length of time; even for a whole winter, if it were necessary to keep them out so long. The foregoing practice deserves imitation in all wet climates, and indeed in all others, in the case of a wet harvest.

8. *Thrashing*—Is all done by the flail, and generally by the quarter; at the price of 4s. and 1s. a load for binding the straw. Sometimes wheat is thrashed, and the straw bound at two-pence a truss: a little is done by the day. By all these methods, the men leave a quantity of lean corn

corn in the straw ; more when paid by the truss than when paid by the day.

Thrashers near London strike with an irregular blow : their rule is, to strike two or three blows rather smartly, and one or two so slightly as to be of little use : thus relieving themselves from the necessary fatigue which the men of other places undergo in thrashing clean. This shifting, or desisting from labour, with the necessary perpendicular blows for preserving the wheat straw straight, for the sake of sending it to market in handsome trusses, is the reason of their not thrashing clean. I think it very difficult, nearly impossible, to thrash straight trusses clean. In places more distant from London, they likewise strike perpendicularly, but incessantly without changing hands, or reducing the force of the blows, till the principal part of the corn be thrashed out on one side ; they then turn the sheaf, and repeat the operation on the other side—they next change hands, and strike in an oblique direction, which draws the straw from the sheaf an inch or two at every such blow, till the whole is completed. This gives them an opportunity of seeing and hitting every ear, till it be cleared of the grain. I have observed them often, and I think there is no other method of thrashing clean by the flail. This practice, it is true, tosses the straw into every direction, as much as is usually done by the mills now coming into use, and it is, therefore, nearly as much bruised ; consequently it could not be sent in quite such handsome trusses to market. For the use of farmers stock, however, the more it is bruised the better ; *and probably if the whole were cut into chaff, it might, by a mixture with roots, be all eaten by cattle.*

I hope that those gentlemen who draw up the Reports of the western counties, will favour the world with particulars

ulars respecting the process of cutting the ears of wheat from the straw; the expence per quarter on the corn; the time employed; the manner of getting the corn out of the ears, &c.

The markets of London have been long supplied with straw drawn straight in handsome trusses. This makes it supposed, that straw thrashed by the mills will be less saleable, on account of being more bruised, and less sightly in the truss. It will very probably be the case for a short time, till either gentlemen or their grooms discover the value of a softer bed for horses; or till most or all the straw be thrashed by mills, which I hope it will be in a short time.

9. *Produce*—Varies, from under ten to upwards of forty bushels per acre. The elements have great influence on the produce of wheat; one year the yield is under twenty, and another upwards of thirty, bushels per acre; soil and cultivation being the same.

I have no information from any gentleman of the county on the subject; but as it may be expected that I should give my opinion of it, I beg leave to repeat, that the arable land is mostly in common fields; of course the husbandry is imperfect, and the crops not very abundant. Perhaps three quarters may average the county; but it certainly does not exceed three and a half.—(Mr. Foot's Report says three and a half*).

* The following may be reckoned among the causes of the failure in the produce of wheat, namely, its being injured by maggots of a small size and yellow colour, which were observed in immense numbers in the wheat fields on the adjoining borders of Yorkshire and Durham, where many farmers sustained considerable loss. Some a great part, and others nearly the whole of their wheat crops, eaten up. It was not at all uncommon, to see a dozen or more of these voracious vermin on a single ear of corn. Very few ears were free from them. I observed the same, in a much less degree, in this county and Surrey.—J. M.

The proportion which corn bears to the straw, is nearly as follows, namely,

The yield of 1793 was	17½	{ bushels of wheat to a load of straw.
of 1794	8½	ditto
of 1795	11	ditto
of 1796	9½	ditto

The medium of four years 11½ ditto.

Straw sold during the same period from 25s. to 40s. per load*.	Perhaps at an average of 30s. (it has lately been as high as 3l. 12s.) which is on the corn, equal per bushel,
to	£.0 2 7
Short straw and chaff	0 0 1
Wheat, at an average price for many years	0 5 6

The entire produce of wheat per bushel, is full £.0 8 2

The weight of the wheat grown in the strong land district, is usually 61 or 62 lbs. per bushel.

The greatest crop of wheat of which I have any account, is sixty-eight bushels per acre: the least is about twelve. The medium between these extremes is forty, which I think would be the average of land highly conditioned. The average produce of Britain does not exceed one half of this quantity, and yet wheat is as certain a crop

* "The price of straw, as might naturally be expected, is dearer in the neighbourhood of London † than in any part of England. It is at present as high as from 30s. to 32s. a load. The load consists of 36 trusses, at 36lbs. per truss. Two loads of wheat straw per acre, is reckoned a tolerable crop, which may be averaged at eight-pence a truss, or 24s. a load, or 2l. 8s. per acre. In other parts of the kingdom, the value of the straw is supposed equal to nearly the expence of reaping."—*P. Foot.*

† "Bath perhaps excepted, where, during the winters of 1791 and 1792, wheat-straw was sold as dear as hay, and many innkeepers, through a principle of economy, used hay of a tolerable quality as litter. Straw, though somewhat reduced, still bears a very high price, a considerable quantity being consumed in making of bricks."—*A note in the margin of Foot's Report.*

as any that is cultivated. *Can greater proof be required, that the lands of England are reduced considerably below par?* This can only have happened by a too frequent repetition of corn crops, and general bad management, which has of course lessened the quantity of live stock, and with that, the best means of raising manure. In future, let the farmers be induced to sow crops to be eaten on the land by cattle, so that they may there leave their dung and urine. The corn will then grow in double quantity; and the live stock, supported by such green crops, will be clear gain to the community*.

10. *Manufacture into Bread.*—The farmers sell their wheat to mealmen, who manufacture it, and sell the flour to the bakers, and the pollard to the farmers and others, for the food of horses, hogs, &c. Very little of the best flour is sold alone. Most of the bakers are indebted to the mealmen more than they can conveniently pay, consequently it is not in their power to buy the best flour, but are under the necessity of being content with seconds, and, in many cases, with such a mixture as the mealman may choose to supply them with. There are persons, who suppose that the adulteration by mixture of various kinds of meal, even bean meal, forms the greater part of the mealman's profit, as it is notorious that the mealmen buy grain of various kinds, and that a large proportion of the bread sold at the price of the best wheaten bread in London, is at least one assize, or two-pence in the peck loaf, under bread of that quality.

* Well has one of the Reporters expressed himself—"Keep the land
"clean, well drained, and rich."—*J. M.*

CORN AND FLOUR COMMITTEE IN THE CITY OF
LONDON, 1795.

“UPON this very interesting subject, an abstract of the evidence laid before the committee, which tends to develop the real causes of the present dearth, may be useful and instructive:

“Mr. Samuel Wyatt gave a very accurate description of the operation of the Albion-mills, by various calculations of the prices of wheat and flour for sixteen years, viz. from 1774 to 1790, the latter five years of which period, when the mills continued to work, the actual saving to the inhabitants of the metropolis was 866,663*l*. The consumption, he stated to be 20,000 sacks per week, *i. e.* 120,000 bushels of wheat!!! He said, the port of London was now (12th October last) overloaded with wheat. The proprietors, at the time the mill was destroyed, were about to erect a third steam engine. The mills improved the quality of the flour, and prevented a combination amongst the millers, which reduced the price. They “would have been perfectly satisfied with the profit of one halfpenny per sack.” The land carriage from Reading is 4*s.* 6*d.* per sack, and so in proportion for other manufactures in the country; and if it was sent in barges, by the Thames, those vessels were liable to be delayed in summer for want of water, and in winter from the navigation being stopped by the ice; neither of which inconveniences attended the operation of the Albion-mills, “because no alteration of the weather could affect them.” He was perfectly convinced, that “flour might be sold “8*s.* per sack lower than the average quarter of wheat; “and if ground upon the spot, the difference might be “still greater. Even in the great frost, in 1789, the “Albion-mills furnished flour at 7*s.* 8*d.* per sack below
“the

"the average quarter of wheat." Mr. Wyatt was clearly of opinion, that a number of mills erected near the metropolis, with one steam engine each, would be beneficial.

"Mr. Titus Woolhead, late a flour-factor, in answer to a number of questions, informed the committee, that he did not remember an instance in the five years that the Albion-mills worked, that the price of a sack of flour was above that of a quarter of wheat, but the sack was at various times, during that period, considerably below the quarter. (Now comes a very material part).

"Q. Are you ready to state why the price of wheat at the corn-market is lower at this time than that of flour?—

A. A few opulent individuals have the entire guidance of the market, and return to the meal-weighers what price they please for the flour; which price is generally regulated by sales to the *necessitous* baker, who is obliged to come with a part of the money in his hand, by way of advance, when he wants flour, and is told it is such a price, being frequently an extortion; and this is the price given to the meal-weighers as the *bona fide* sale; by which means the assize of bread is often times advanced, according to the flour table lately established by the court of aldermen.

"Q. What remedy have you for this evil?—A. A fair and candid return of wheat and flour sold at the corn-market."

II. R Y E.

THERE are a few acres of rye grown on many farms of the more sandy nature in this county, for spring green feed. It comes very early, and holds in perfection three or four weeks; the rest (being then superseded by winter

tares) is permitted to ripen its seed, which it does about the middle of July, at which time the straw alone sometimes sells at four or five pounds an acre. The seed is sown from the middle of August till the middle of September: it is also sown mixed with winter tares; but it is not a very convenient grain for that purpose, owing to its being fit to cut as green food a fortnight before the tares, and ripening much too early to accompany them. However, it should not be quite disregarded, as it is one of the links of a chain of green food that may support cattle on an arable farm all the year round.

III. BARLEY.

THERE are about 3800 acres of land annually sown with barley in this county, the greater part of which is sown after wheat.

The tender nature of this plant in its infant state, unfits it for cold and compact soils. It thrives best in a soil that is moderately dry and light (as a loamy sand), and is esteemed rather a clean crop*. From the nature of corn crops, it ought not, on any account, to be sown after either wheat, rye, or oats: the much better practice being, to sow it after turnips, potatoes, carrots, tares, &c.; and, in some cases, after hemp, flax, and rape. The land should not receive any further manure than what was laid on for the preceding crop, together with the dung and urine deposited by cattle during the time they are eating the green crop off.

* For this crop, the soil is generally well tilled late in the spring, which reduces the weeds very much; and as it occupies the ground only four months, they have not time to recover themselves, and perfect their seed.—
J. M.

1. *Preparation.*—The soil should invariably be well pulverized, and rendered open, by a thin ploughing, and then by harrowing; which should be followed, at as great a distance as the season will allow, by a more deep cross-ploughing, harrowing and rolling. The seed should then be ploughed in with a very small furrow, and immediately afterwards clover seed harrowed in with short tined harrows, which leaves the land as light as possible. The next thing to be done is, with one horse to draw a very light roll over the land, in order to press the mould gently on the seeds. These operations promote a more certain, speedy, and equal vegetation, than can be procured by harrowing in the seed*. Many farmers postpone the last rolling until the first leaves of the seeds are up, but it is believed, more from the hurry of the season than from choice. This perfect tillage seldom fails to secure a good crop of barley, and a plant of clover.

In case of land springs, or excessive rain, it is advisable not to plough the land flat, but into ridgelets of about eighteen inches wide. These will drain themselves dry in any weather, at least so much so, that two or three dry days will prepare the soil for harrowing previous to the second ploughing; and, if the season should still continue unfavourable, the land, on such second ploughing, might be laid up in a similar manner till sowing time; when two or three more days of fine weather, would render it fit to be harrowed or scuffled down, and for ploughing in the seed; otherwise, a third ploughing may be given, and the seed harrowed in, which last is esteemed the better practice, when the soil is not quite so dry as could be wished. Scuffling the land, instead of the second ploughing, would in every fine season dispatch the work,

* Harrowing in the seed is the more usual method, and is the cause of much grain being lost, and also of the crop being of two or three growths.

—J. M.

and be a saving of expence. Scuffling the cleanest soil would be equal to cross-ploughing; and in soils not quite free from root-weeds, it would be much better, by bringing them within reach of the harrows. It will perform upwards of double the quantity of work with the same number of men and horses, and leave the land equally ready for the harrow and roll previous to the sowing.

2. *Sort*.—Only one, namely, the common long flat eared, containing two rows of grain.

3. *Steep*.—The seed is never steeped, and yet the farmers are continually complaining of its coming up at different periods; thus producing two crops, which do not become ripe at the same time, and are injurious to the sample. Steeping the seed a proper number of hours (which might be ascertained by experiment), seems to be as well calculated to secure a uniform vegetation, and prevent this complaint, as poisoning the seed appears to be to keep it from vermin.

4. *Seed*—(*quantity sown*).—The quantity of seed varies much with the quality of the land, and also with the season of the year; it being advisable to sow much less seed on land in high condition, than on an exhausted soil. Early sowing requires less seed than late; but on a medium soil, in proper condition, sown broadcast, in March three and an half, in April four, and in May four and an half bushels per acre. A rich soil makes such great difference, that it can hardly be sown too thin; even one bushel and an half early sown, have produced as much as could stand; whereas had three or four bushels been sown, the crop would have been lodged, and of a very reduced value.

5. *Time of Sowing*.—Barley is usually sown during the months of March, April, and May, and it has succeeded
when

when sown the first week in June; though it ought to be sown as early as the soil is sufficiently dry and in condition to receive it, and the prior attention which is due to the oat, tare, and other crops, will permit. Let it always be kept in mind, that barley will bear late sowing much better than those crops.

6. *Culture while growing.*—None.

7. *Harvest*—Commences about the middle of August, and generally after the oats and wheat are reaped. It is nearly all mown with scythes, previously furnished with a bow or cradle, to collect the corn together, and keep it from scattering. Some of the heaviest crops are then bound into sheaves, and set up in shocks; but in general, it lies in the swaths till it is in a proper state to be carried. It is then raked into heaps, in rows, placed at such a moderate distance from each other, that, when the cart goes between two rows, a man on each side may pitch to the load without over-reaching. It is then carted home, and put into a stack, or barn, in the same manner as hay. Barley is less in danger of shaking out of the ear, from being too ripe, than any other corn; which is one reason for its being the last reaped.

8. *Thrashing.*—All done by the flail: but the straw in general is not bound into trusses. Some of it, however, is, and sold for the purpose of packing.

9. *Produce*—Varies from fifteen to seventy-five bushels per acre. The average produce of the county is about four quarters of corn and two loads of straw per acre. The straw usually sells at about a guinea a load, delivered in, which, with chaff and thin grain, is equal to

one shilling and six-pence per bushel on the corn; and, as the corn has averaged three shillings, together they produce four shillings and six-pence per bushel, or seven pounds four shillings per acre.

The ultimate destination of barley, to be converted into beer and spirits, raises the value of this crop to more money per acre than that of any other grain. For after the farmer has disposed of it, the maltster, brewer, distiller, rectifier, and victualler, successively draw the wages of labour and profit from it, before it comes to the consumer. Including a revenue of five and one quarter millions a year, which it nets to government, but which costs the subject between six and seven millions, *its entire expence to the consumer at this time, is not less than thirty pounds an acre**.

10. *Manufacture.*—Much of the most ordinary barley is given to poultry: the rest is sold to the maltsters, except so much as is reserved for seed.

Pearl Barley—A mill to manufacture pearl barley costs about twenty pounds. A ton, or 160 stone, of pearl barley, sells for twenty-three pounds, which is rather under three shillings a stone, or thirteen shillings and four-pence a bushel. Twenty-three stone and an half of common barley produces *five stone and an half* of pearl barley, by the common method of manufacturing it; but by an addition to the mill, which would only cost two pounds, the barley corn could be split, and then the same quantity would yield *nine stone* of pearl barley. (Minute of evidence before a committee of the London Society of Arts, &c.)

* I understand that porter is now brewed in the ratio of 162 gallons from one quarter of malt; and is sold by the retailer after the rate of one shilling and two-pence per gallon, which produces nine pounds nine shillings. Deduct the value of the hops, and there remains upwards of a guinea a bushel for the malt, or full thirty pounds an acre. In the article of spirits, it must necessarily yield much more.—*J. M.*

“ The barley (says Mr. Foot) which grows in the
“ parishes of Chelsea, Fulham, and Chiswick, has been
“ for many years distinguished for its good quality, and
“ has been much sought after for seed. When the farm-
“ er, from a multiplicity of business, cannot get his land
“ into a fine tilth time enough, or has not got his turnips
“ eaten or drawn off the land, or is retarded through the
“ inclemency of the weather, then barley is the most pro-
“ per seed to sow, even so late in the season as the month
“ of May. For though it is late sown, it grows quicker
“ than any other sort, and is frequently ripe so early as
“ the month of August. Experience has proved it to be
“ the best barley for malting, after having been once
“ sown in loamy or stiff lands, which makes the skin
“ thinner, and increases the quantity of meal in the grain.
“ This barley has a great advantage over every other
“ kind of barley; for being, by its quick growth, less
“ time abroad, it is less exposed to heavy rains, which
“ always prove unfriendly to the culture of this grain.
“ This is the reason why the farmers of these parishes
“ have the *whitest*, most *thin skinned*, and mellowest bar-
“ ley in England; and which always fetches the greatest
“ price, when sold for seed or for malt. I understand,
“ however, that beneficial as the cultivation of this species
“ of grain has been, it has of late years decreased consi-
“ derably, and been supplanted by the superior profit pro-
“ duced from the growth of vegetables for the London
“ markets. A bushel, Winchester measure, of this barley,
“ weighed under my own inspection 52 lb.; but I am
“ informed that, taken on an average of years, it will
“ weigh 56 lb.”

IV. O A T S.

OATS are but little grown in this county, nor would I recommend them as a fit crop for a Middlesex farmer, in his common-field land ; but on inclosed clayey loams they might be introduced, once in six years, in a very valuable rotation of crops, as all argillaceous soils are much better calculated for the production of oats than of barley. I shall offer a few general observations on this grain. In the first place, oats will grow on almost any land, though with them, as with most other crops, the richer the soil the greater will be the produce ; even up to an hundred bushels per acre. Next, they always sell for less money per bushel than barley ; but then they are a more certain crop, which circumstance, added to the superior quality of the oat straw for the support of cattle, and to their yielding more in quantity, places them on an equality with barley for medium loams. For stronger soils, and fen, they are much more suitable than barley, though they are a crop which leaves the soil rather more foul and dense.

The soil ought not to be manured for oats in any greater degree than as I have described for barley, nor ought they ever to follow wheat, rye, or barley*. They may be sown in tenacious, cold, fenny, and wet soils, or in others that are not in condition for barley ; and they will succeed very well after any green or root crop.

1. *Preparation.*—After tares, cole, early peas, or any other crop that comes off not later than the first week in July, a clean bastard fallow should be made, and the land

* There are some instances of oats having been sown after other corn, on land exhausted and foul, as the last resource of knavish poverty.—*J. M.*

laid up before winter, into ridges fit for sowing*. Or after any clean crop, that comes off too late for making a bastard fallow, plough only once, and let that be as early as the other works to be done on the farm, will permit, into ridges fit for sowing. In both these cases, sow broadcast, with clover, and cover the seeds with harrows suitable to the state of the land; and if it be dry and crumbly, as it ought to be, immediately draw a very light roll over it, thereby pressing the mould gently on the seeds; otherwise postpone the rolling till a dry time after the seeds are up.

4. *Seed—(quantity sown).*—The quantity of seed ought to be varied, in the same proportion as I have stated in my account of barley; but on a medium soil, in proper condition, sow broadcast early in March four bushels, or in April five, and so in proportion to the lateness of the season.

5. *Time of Sowing.*—The first dry season in the spring, from the middle of February till the end of April; remembering that *early sowing produces an early harvest*, “*a good sample, and generally the best crop.*” When the intention of the farmer is to put oats into a soil that is naturally too dry or burning, he should by all means sow very early; though they will not stand an extreme frosty winter, such as 1794-5, otherwise the better way would be, to sow them in autumn, as I did a few acres in 1793, among tares, which, in the following year, were by much the largest I ever saw.

* This is only meant of land that is seldom sufficiently dry to admit of being ploughed in the winter.—J. M.

6. Culture.

6. *Culture*.—The thistles are cut out by hooks, and the other weeds drawn by hand. Should a crop of oats be so luxuriant as to fall, or lodge, it will receive less damage than any other grain, therefore the farmer need not be under any apprehension of its being too rank, only that the young clover would in some measure be injured by the crop being too heavy.

7. *Harvesting*.—Oats are harvested in this county in the same manner as barley. They should be cut as fast as they become ripe, or rather two or three days before they are ripe, or they will shed very freely, either with the wind or in harvesting. Care should at the same time be taken, not to cut them many days before they are ripe, as it is difficult to thrash the unripe grains out of the straw.

8. *Thrashing*.—The same as I have before described for barley.

9. *Produce*.—Is from four quarters to twelve; perhaps five would average the county.

10. *Appropriation*.—All given to horses; nor is there a mill in the county that can make oatmeal, grits, &c.

V. B E A N S.

THERE are about 2800 acres of land annually cropped with beans in this county; and they are cultivated in the most clean and perfect manner.

Beans are a crop which thrive well in almost any soil that is rather strong, such as medium loams, sandy loams, clayey

clayey loams, and chalky loams; on clay, marl, chalk, and such like cool subsoils.

They should be manured for, and kept perfectly clean while growing, by ploughing, horse or hand-hoeing, and hand-weeding; and where they are so managed, they are an excellent preparation for either wheat or oats.

They have a tap root, and hence they are more likely to succeed after crops that have fibrous roots; though I never heard that they would not grow after any crop. They are generally sown after wheat, barley, or oats; and ought to be planted on ridgelets, especially on thin skinned soils.

1. *Preparation.*—The preparation for this crop should be as follows: early in autumn lay the manure on, and immediately plough the land into ridgelets, of two feet six inches wide; in which state let it lie until the season for planting, when the seed may be dibbled in, one row of beans into the middle of each ridgelet, at the distance of about three inches from bean to bean. They should be immediately covered, which may be done by children, with a garden-rake or hoe; or, should the land be dry and crumbly, a horse and a bush harrow would do as well. In most places, it is advisable to set a boy with a rattle to frighten away the rooks, until the beans are up*.

The distance between the rows will not prevent the crop from completely covering the ground, especially if the land was manured for them, as they will branch out sideways, three or four stout stems from each root†.

2. *Sort.*

* Immediately after wheat seed-time, the farmers of this county manure all their wheat stubble, and plough the land so as to finish before Christmas, in which state it lies till planting season.—*J. M.*

† They should be early planted, in order to their getting sufficient root-hold of the land, and procuring shade against the hot weather sets in. It is also

2. *Sort.*—Tick beans are by some thought to yield rather the greatest produce ; but the horse-beans grow higher in the stem, smother the land more, and are more suitable for the stronger soils.

In purchasing beans for seed, care should be taken to choose those that are bright and hard, not shrivelled.—The smaller they are, the greater number will of course be in the same measure, and the higher price they will produce at market.

3. *Steep.*—None used.

4. *Seed—(quantity).*—In rows of two feet and a half, about two bushels per acre ; or in rows of fifteen inches, the seed will be near four bushels. The women are paid

also some security against the black dolphin, which is the greatest enemy the bean is ever attacked by. They require a soil that can seldom be worked without damage during the winter and spring, consequently it ought to be manured, and gathered into one bout ridges, in the autumn. The shape of these ridges keeps the land more dry through the winter than any other, and prevents excessive rains from washing away the manure, which had been previously folded by the plough into the center of such ridges ; in which state it should lie until the season for sowing, when the land, thus prepared, will be so dry as to admit of dibbling nearly every fair day, which secures to the farmer the advantage of choosing his season. I dunged about ten acres in September 1793, and ploughed the land into ridges of two feet six inches wide, burying the dung in the middle of the ridges. The land lay dry through the winter, and I dibbled one row of beans into the middle of each ridge, during the first week of February 1794. My neighbours, on a similar soil, who ploughed into flat ridges of about fifteen feet wide, could not get their seed in till March. The ensuing summer was uncommonly dry : my beans being so unusually wide apart, admitted the plough and hoe to work as freely between the rows as a stubborn soil would allow. The plants tillered, or branched, till they completely covered the intervals, and the field appeared as completely cropped as though it had been sown broadcast. When my neighbours' plants were beginning to pod, mine were half set. The whole were alike attacked by the black fly, which reduced their crop to a bushel or two per acre, while I had twenty.—*J. M.*

4d. a gallon for dibbling in the seed, which they perform with astonishing rapidity, along a line stretched across the ridges, leaving a space of fifteen inches between each row; the seed is covered by a bush harrow, drawn by horses who walk in the furrows.

5. *Time of Sowing.*—In mild and sheltered situations, all the month of January; and in more exposed places, as early in February as the soil and season will permit. January and February are good seasons; March but indifferent, and April is wholly unfit. A hard frost after they are up, would injure them much, and a very severe one, followed by a rapid thaw, would destroy them.

6. *Culture while growing.*—When the crop is about five or six inches high, the intervals are always hand-hoed, and the rows weeded; which operation is repeated just before they blossom, carefully drawing the mould up to the plants at the latter hoeing. If the land should be so temperate, a little before the time of the second hoeing, as to admit of being worked by a plough or a horse-hoe in earthing up the rows, it would be of great advantage to the crop; but the clayey loams are only in a condition to be so worked during a few days immediately after heavy rains. A showery summer is more favourable to beans than a dry one.

7. *Harvesting.*—They are bagged close to the ground, bound, and set up, generally four sheaves together, and are tied with a part of the beans, though sometimes with straw ropes, and at other times with the yarn of old hemp ropes, especially when the beans are too ripe to make binders for themselves.

They

They are seldom ripe enough to cut till the latter end of August, and the proper time is when the kids are turning black, about ten days before they would begin to open at the ends. Though in some parts of the field the kids may not be so black as in others, this should not prevent their being cut, for they will ripen and harden after that is done, by setting the sheaves upright, and leaving them in the field for a week or ten days. If they are cut long before they are ripe, they will shrink and shrivel; and if too ripe, they will shed considerably; though there is much less danger in reaping them too early than in letting them stand too long. Those that are over-ripe should be cut with the dew on them, and carried to the barn in the same state, and the green parts of the crop should be cut in the middle of the day.

When the intention is to sow wheat or tares after beans, they ought to be set up so as to occupy as little space as possible, that the vacant ground may be immediately prepared for the next crop.

8. *Thrashing*.—All done by flails; thrashed and cleaned at two shillings a quarter.

9. *Produce*.—Varies from ten to eighty bushels per acre. It is rendered a very precarious crop by the ravages of myriads of small black insects of the same species. The ladybirds are supposed either to generate or feed on them, as they are observed to be much among them. Mr. Foot says, the average produce is from “three and a half to “four quarters per acre*.”

The

* “The ground which Mr. Robinson has in Scrathedge field, called “Ireland’s Piece, was formerly belonging to the monastery of Syon, as did “Mr. Robinson’s other estate, called the Manor of Wyke, laying on Syon “Hill.

The straw is generally employed in bedding the farmer's horses, and other cattle; and also in littering the farm-yards, where it is picked over by young stock; though sometimes a load is sold for 20s. or 25s. delivered.

10. *Appropriation.*—All given to horses, except what are preserved for seed, and such as are podded while green, and sent to the London markets. When pigs are fed with beans, the meat becomes so hard as to make very ordinary pork, but good bacon. Also, it is supposed that the mealmen grind many horse-beans among wheat, to be manufactured into bread.

VI. P E A S.

THERE are about 3000 acres of land annually cropped with peas in this county; they are much on the increase, and are cultivated in the most clean and garden-like manner.

1. *Preparation.*—On upwards of 2000 acres they succeed a clean crop of beans: in which case, the bean stubble is about January, and during every dry time till

"Hill. These ten acres being detached, were lett at 40s. an acre, to a tenant for several years, who managed the ground so very ill, that it grew many weeds, and became a nuisance to the adjoining farmers; upon which Mr. Robinson took it out of the farmer's hands at Michaelmas, 1795. Mr. Robinson, immediately on taking it into his own hands, had it ploughed several times, cross-ploughed, harrowed and cleaned, as well as the season of the year would admit of; and in February 1796, planted beans upon it, which were kept very clean, and of which he had a produce at the rate of full five quarters to an acre."

"This land lies in the parish of Heston, the field partly adjoining Hounslow-heath; and is the same kind of ground as Heston great common field, so remarkable for wheat."

The foregoing note was received in a letter from Mr. Robinson.—J. M.

N

March,

March, ploughed up with a thin furrow, and soon afterwards re-ploughed a full depth. The water-furrows are kept open, and the land remains in this state till seed-time.

The peas grown with the intent of being gathered green, and sent in their pods to market, succeed clover, corn, or any other crop. The land appropriated to this use, is generally a dry loamy sand; and manure is usually ploughed in during January and February; after which it is harrowed, and is then fit for the reception of the seed, which is put into drills, fifteen inches apart, mostly made across, but, occasionally, along the ridges; and the seed is covered in with hoes. Some persons bush harrow the whole, which gives the land a more neat and compact appearance.

2. *Sort.*—White peas are the only sort raised for podding; of these, there are several varieties, as the hotspur, early Charlton, marrowfat, &c.

Grey peas of several varieties, are nearly the only sort grown on the afore-mentioned 2000 acres.

3. *Steep.*—Not any in use.

4. *Seed.*—The quantity sown is generally about three bushels an acre.

5. *Time of Sowing.*—Such as are intended for podding, or to be sent green to market, are put into the ground every week or fortnight during the months of January, February, and March, for the purpose of producing a regular succession of crops, to keep up the daily supply at market. The grey peas are sown during the whole of March, beginning as soon in the month as the soil can be got into proper condition after the bean seed-time is finished.

6. *Culture.*

6. *Culture*.—The intervals between the rows of every kind of pea, are twice hand-hoed, once when the plants are about three inches high, and again a short time before they are in blossom. The rows are laid down and well earthed up, by the last hoeing, and they are carefully weeded by hand.

7. *Harvesting*.—Against the podding season, the poor people from every part of the town apply to the farmers who have early peas. Many of the gentlemen, and richer farmers, sell their peas by the acre, to persons who employ the podders, and most of the poor and common farmers select a certain number to gather the pods, which in every case is done by the sack of four heaped bushels. The number of these people employed by any one person, is proportioned to the number of acres—about forty to ten acres: the whole is a scene of bustle and cheerfulness, though in rags; and the work is by some continued on Sundays as well as other days. The carts are loaded and sent off at various hours, proportioned to their distance from market, so as to deliver their loads to salesmen in the different markets, from three till five o'clock in the morning.

The peas are usually picked twice over, after which there are at times many left which stand for seed. This is esteemed a loss, as they are less profitable in this state than while they were green, and only happens from a scarcity of hands. When these are in plenty, they are picked clean, the pea haulm is immediately cut up with hooks, removed on to every fifth ridge, or into a grass field, where it is cured and put into stacks, for horse-feed, and the same land is prepared as speedily as possible for turnips.

The grey, and other late peas, stand to ripen their seed; they are then cut up with hooks, rolled into wads,

turned once or twice till they are cured in the field, and thus carted home and put into stacks.

8. *Thrashing*.—All done by the flail.

9. *Produce*.—The late peas that stand to be ripe, vary very much in their produce. To give an average crop would be mere conjecture. Mr. Foot says, it is “from three and a half to four quarters per acre, on the whole county.”

The early sorts are sometimes sold from seven to nine pounds per acre in the field; the buyer taking every risk and expence on himself: the produce varying, from ten to fifty sacks; and the expence from thirty shillings to five pounds.

I am not sufficiently acquainted with the subject, to give the average of the county, with any thing like accuracy; but I suppose it to be about twenty-five or thirty sacks, which sell at from eight to eighteen shillings, producing about eighteen pounds per acre*.

10. *Appropriation*.—About one-third of them are eaten by human beings, and the rest by hogs.

* “The green peas are sold in baskets, or half bushel sacks, at different prices, from five shillings to ten or twelve shillings, from the beginning of June to the end of July; the expence of picking about four-pence a bushel. As they manure for the peas which are got in early in spring, they find this advantage in sowing them on a clover ley, that the ground more readily bears the weight of the dung-cart in winter. When the ground is cleared of the peas, turnips are immediately sown, in hopes of securing two crops in one year: this, however, will only succeed on ground well cultivated and richly manured. In a favourable year, the peas will produce ten pounds per acre. The excellent state of the pea haulm, when cut green, and dried suddenly while in the full vigour of its sap, is another recommendation of this mode of husbandry, where practicable. Horses are found to thrive on it nearly as well as on hay.”—*Dr. Wilkinson*.

For further observations on green-peas for the London markets, see the section on kitchen-gardens; and Mr. Vancouver's *Essex*, p. 89.

VII. POTATOES.

MOST of the farmers in this county, and such of the cottagers who have gardens, grow potatoes for their own use, but few or none for sale.

The management of a potatoe crop, in one bout ridges, is accurately, and fully, described in Mr. Tuke's Report of the North Riding of Yorkshire; and by Sir James Kirkpatrick, in the Appendix to the Dumfries Report. It is, indeed, the only mode in use to any extent, in the northern counties of England, and the adjoining ones in Scotland; where they excel in the cultivation of this root in drills about thirty inches apart. They will do well to continue this practice, as there is no better known.

Potatoes intended for sets, should be grown without dung on rich soils, and on poor soils with less than usual, and with less earthing up, in order to prevent the curl, which is now, I believe, known to be occasioned by the sets being grown under a system too rich and forcing. (See two or three of the last volumes of the London Society of Arts, &c.).

For strong land, potatoes are an improper crop*; and on light land, or loamy-sands, regard should be had to the

* A rich sandy loam is the best; but they may be grown on all soils of a loose texture.—(See Mr. Billingsley's paper in the Transactions of the Bath Society).

Potatoes are suitable for a dry soil in a moist climate.—(See the Report of Cornwall, 4to. p. 39).

depth of the topsoil, the nature of the subsoil, the climate of the district, and the general dryness of the land. On all very dry sands, in a dry climate, the land should be kept quite flat, and the plants should be hoed by hand, as the only means of preserving the ground sufficiently moist to promote the growth of the crop. But in every situation, where there is no danger of the land being too dry, and on all thin soils, one bout ridges have the advantage over every other method. This way of laying up the land doubles the depth of the staple, concentrates the manure, and admits of the soil being kept more clean, and in garden-like culture, than any other which has yet been used. This mode too, it should be observed, is particularly applicable to all moist climates.

The foregoing observations have been established with me, after being fully experimented. And as they apply with equal force to the culture of turnips, it in some measure accounts for the two opposite methods of cultivating these crops, in the south-east and north-west districts of England. In each of these districts, the farmers are, very properly, tenacious of the superiority of their own method. —(See section tillage, sandy and clayey soils).

A considerable proportion of the potatoes sold in the markets of London, are brought from the Humber.

VIII. T A R E S.

MANY of the farmers in this county grow a few acres of tares, and the culture of them is extended every year, from the circumstance of their importance becoming better understood. It is a considerable degree of gratification to me, to have been the first who sowed them on a large scale,

scale, and publicly recommended them to the notice of farmers, as highly deserving to be introduced into a regular rotation of crops*. After several years more experience of their utility, it is impossible for me to say so much in their favour as they deserve. *They may be made the principal means of enabling the arable farmer to support as much live stock as the grazier. For during the time they occupy the ground, they produce more green food of the best quality, per acre, than Romney-marsh or Pevensy-level; and the ground may be cleared of them in the month of June, in such good time as to admit of loamy sands producing a crop of clean turnips in the same year, and of clayey loams being prepared and sown with wheat. They support cattle; will make both sheep and bullocks of every size and breed fat; they suit every situation, and will flourish on all the variety of soils in this country, from the gravel-hills near Dartford, in Kent, to the stiff yellow clays in the wealds of Sussex†. They do not depend on any particular market; and, above all, they manure the land fit for the immediate reception of turnips; whereby a succession of green crops can be kept up, that would fat a very increased quantity of live stock, and be the means of raising, in situations the most distant from towns, an abundance of those great sources of fertility, dung and urine. A judicious combination of tares with turnips, clover and sainfoin, may be the means of rendering our poor sheep-walks, downs, and wastes, of from ten to thirty times their present value to the community.*

1. *Preparation.*—If the land be poor, or at least not rich, manure it, otherwise not; plough it thinly into

* Vide my letter to the Society of Arts, &c. in the 13th vol. of their Transactions, for which communication I was honoured with a medal by that respectable body. And the Board of Agriculture unanimously voted me their thanks, for my letter to them on the same subject.—*J. M.*

† See Boys' Kent, p. 77.

ridges well calculated to keep it dry ; sow broadcast, and harrow in the seed.

2. *Sort.*—There are two sorts ; the winter tare and the spring tare. The former is the most sown, and is sufficiently hardy to stand all the changes of weather, even the severest degrees of frost ever experienced in England, or, I believe, in Great Britain*.

3. *Steep.*—None used. Though, for sowing in any very dry season, it would be advisable to steep the seed.

4. *Seed*—(*quantity sown*).—In the middle of the season about two bushels and a half, on soils moderately rich ; but early sowing and rich soils require less seed than poor soils and late sowing.

Many persons sow a little rye among winter tares ; and some intelligent men sow a small quantity of barley among spring tares.

5. *Time of Sowing.*—From the middle of August to the middle of October. If the land be poor, or the situation exposed, by all means sow early, even in August ; and in all cases, it is advisable to sow at different periods—early, medium and late, in order to have a succession of them for feed the ensuing spring.

6. *Culture.*—A light roller should be drawn over them during the first dry time in March, to prepare the ground for the scythe ; and the most rank weeds should be drawn by hand in April.

* Those sown in August 1794, stood the long and severe frost of the following winter perfectly well, in Surrey.—*J. M.*

7. *Harvest-*

7. *Harvesting.*—They begin to blossom in May, and from that time, I am of opinion, the farmer's stock should be wholly supported on them till the blossoms begin to fall off, and the formation of pods to take place; at which time, all that are left should be made into hay, unless pods should appear in large quantities, and supposing them to be of the true winter sort. The farmer should in that case reserve seed enough for his own use; otherwise he should make them all into hay. If the land has been dunged, and the seed good, there will probably be a crop of twelve tons of green tares, or three tons of hay; and, provided they are well cured, it will be the best hay on the farm. But tares require a considerable degree of sun. Rain is very injurious to them. In case a continuance of wet weather should happen after they are cut, it would be difficult to make them into hay at all, at least of a good and salutary quality. On account of this risk, I would recommend that all the stock of a farm should be soiled on them green; and in doing so, it will necessarily have the good effect of taking the stock off the grass land long enough to allow of its being mown for hay. By this means the farmer's meadow hay will be much increased in quantity; he will not have occasion for pasture (the tares abundantly supplying the place of the richest pasturage), and by the time that the cattle return from green tares, the grass land in the mean time having been mown, will be ready to receive them. I conceive that I may justly be allowed to estimate the value of tares, as if they were all made into hay, as this will be the case with a great part of them. The rest will preserve an additional quantity of meadow hay, perhaps equal to their own weight.

Spring tares produce rather a lighter crop, and are subject to much risk from a dry summer. There is no difference in their application, or value per ton; but the

the spring sort coming a fortnight later, it seems to be convenient and advisable to grow some of each sort, and to have a succession of them for green food all the summer.

As to the manner of giving them to cattle, it would be wasteful in the extreme to turn live stock into a field of tares, as their treading and lying down would do great mischief to the crop, even by feeding it in small patches hurdled off. The most advisable method would be, to mow the tares off the first half acre, and to carry the produce into the stables, cow-houses and fold-yards, or on to poor land, to be consumed by stock. Then to hurdle the growing tares from such *cleared ground*, into *which* put the stock, and feed them all with the tares, given to them in racks, removing the hurdles and the racks forward daily to the edge of the growing tares; which will manure the land uniformly, and deposit all the urine in the soil. Or a very "good method, is to " feed them through rack hurdles, which are made the " same as the common five-railed ones, only leaving the " middle rail out, and nailing upright pieces across, at " proper distances, to admit the sheep to put their heads " through. A swath of vetches being mown" in the direction you wish to plough the land, " a sufficient number of these hurdles, allowing one to five sheep, are " set close to it: at noon the shepherd mows another " swath, and throws it to the hurdles, and the same at " night: next morning, a swath being first mown, the " hurdles are again set; thus moving them once in the " twenty-four hours, by this trifling additional trouble, " the vetches are eaten clean off, and the land equally " benefited."—(*Gloucester Report*, 4to. p. 17).

8. *Thrashing*.—The seed thrashes out very readily by the flail.

9. *Produce*.

9. *Produce.*—I have weighed a sufficient quantity of green tares to know, that the produce was twelve tons per acre ; and when made into hay, it was three tons ; which in this county is worth from twelve to fifteen guineas per acre. In more distant places, where meadow hay sells from fifty shillings to three pounds per load, the tares will be worth from seven pounds ten shillings to nine pounds per acre. The seed will sell from five shillings to twenty-one shillings per bushel. A neighbour of mine, who grew tares on my recommendation, permitted one field to stand for seed : it produced upwards of forty bushels per acre.

10. *Appropriation.*—Pigeons prefer tares to all other food.

NOTES.

"By one crop of vetches succeeding another, he (Mr. Halstead, of Lavant, Sussex), ensures a crop the whole summer, of the best food that can be given to cattle : after this he sows turnips ; then wheat."

"Tares are of such infinite importance, that not one tenth of his (Mr. Davis, of Beddingham, Sussex), stock could be maintained without them : horses, cows, sheep, hogs, all feed upon them. Hogs are soiled upon them, without any other food. This plant maintains more stock than any other plant whatsoever. Upon one acre of tares Mr. Davis can maintain four horses in much better condition than upon five acres of grass. Upon eight acres he has kept twelve horses and five cows for three months (June, July and August), and no other food given them."

"No artificial food whatever, is equal to this excellent plant, at Eastbourne."—*Annals of Agriculture*, vol. xxii, p. 237.

"They find this crop to be a hearty and most nourishing food for all sorts of cattle. Cows give more butter when fed with this plant, than with any other food whatsoever."

IX. TURNIPS.

IX. TURNIPS.

TURNIPS are undoubtedly the basis of the best husbandry, and, in every part of this island, they will always be a principal crop in the most improved methods of cultivating loamy sands*. They support and make fat a very increased quantity of animal food, and, *by the dung and urine of fat cattle, the land becomes more highly enriched than by any other means.* It is an advantage of great importance, that they require such late sowing, as to give the farmer an opportunity of reaping *two green crops* on the same land in one year, both of which may be fed by cattle. *A succession of these crops (tares and turnips†) may be raised and consumed on dry land, till it acquires any desired degree of richness; and will feed more bullocks and sheep than the best grass land in the kingdom ||.* And what is of great consequence, it will be perfectly clean, and fit for every sort of corn during the whole time. But they are crops that are perfectly incompatible with common fields, and for that reason, more than any other, they are so little grown in England. *Inclose the common fields, and the tare and turnip husbandry will become general; which will be the most effectual means of loading our shambles with meat, and filling our granaries with corn.*

The broadcast method of growing turnips is the only one made use of in this county. They are invariably twice

* They also grow very well on well drained black peat earth; and as a first crop on the breaking up of strong loams.—*J. M.*

† Turnips grow very well after early peas, or being sown among hemp or flax.—*J. M.*

|| Romney-marsh feeds five or six sheep, per acre per annum. An acre of loamy sand, only moderately rich, cropped with tares in the spring, and turnips in the autumn, will fatten twenty of the same sheep.—*J. M.*

hoed by hand, and are mostly consumed by cows*, whose owners buy them growing in the fields, at every distance short of twelve or thirteen miles from London, at prices varying from five to ten guineas per acre, according to the length of carriage and quantity of the crop. The cow-keepers are at the expence of pulling them up, loading and carting them home, which is generally done in waggons drawn by six stout horses, in loads, that, for their largeness, surprize every beholder†.

In the south of England, the broadcast method of growing turnips is the only one known; but in several counties in the north of England, and south of Scotland, the more intelligent farmers grow them *on one bout ridges*‡. The two modes are certainly widely different, but there are particular soils, and climates, which make them both perfectly proper.—(Vide the tillage of wet land, and the cultivation of potatoes).

The broadcast method of growing them, among the gardening farmers within four or five miles of London, is perfectly unexceptionable; both on account of the richness and depth of their cultivated soil; and it is so on all highly enriched soils of a foot or more in depth, which have a subsoil of dry gravel; also on light land in every climate that is too dry and burning. The west side of this island, however, is sufficiently moist, even to two-thirds, or at least to more than half, of its width; and for that reason, is most admirably calculated for the production of root crops in one bout ridges. The greater part of the

* Gardeners, and some of the poorest farmers, send their turnips to Covent-garden and other markets, for the use of the inhabitants of the metropolis.—*J. M.*

† To the manifest destruction of the roads.—*J. M.*

‡ They are thus grown in Northumberland, Cumberland, Durham, the North Riding of Yorkshire, the Lothians, Dumfries-shire, Annandale, and some other places in Scotland.—*J. M.*

east coast is so very thin skinned, as to be ill calculated for the production of the largest tap-rooted plants; consequently, with the foregoing exceptions, *the method of growing turnips on one bout ridges* is eminently superior to every other practice, as to the cultivation of this invaluable root.* Turnips, it is well known, have a tap-root of a foot or more in length, and many of the soils in this kingdom, when laid level for a crop, are only six or seven inches deep to the subsoil. Of course, the *superstratum* being only half the depth which the roots require, the growth of the plants must be stunted. In order to remedy this defect of the soil, we must have recourse to art: the land should be laid up in one bout ridges, and the seed should be covered in on the highest part of such ridges. This operation rather more than doubles the natural depth of the soil and quantity of pasture, where the turnips have to feed and grow.

Another great advantage to the success of the crop, is obtained by one bout ridges, namely, confining the manure to less than one half of the space necessarily occupied by it in the broadcast method. This concentration of the manure to the spot where it cannot escape the feeding powers of the plants, cannot fail of forcing the growth of the turnips to a size much larger than by the broadcast method. Further, and which is of some importance, the hoeing and weeding of the rows of all turnips so grown, can be perfectly well done by women and children, and a light swing plough can be occasionally employed in the intervals; at once destroying the weeds and earthing up the plants†.

The

* One bout ridges are particularly applicable to every soil and climate that is too moist for the broadcast method; for, let the season be ever so wet, the crops on these ridges are sure to be of a proper degree of dryness.—
J. M.

† Turnips have a long tap-root (sometimes two feet three inches long) which shoots below the cultivated soil, and must greatly depend on the sub-
stratum

The danger likewise of sheep casting themselves in the furrows of a close, seems to be lessened, or totally removed, by the drill method of growing turnips; for on one bout ridges sheep cannot lie down on their sides, or roll on their backs, as they sometimes do on ridges and furrows under the broadcast system.

This method of growing turnips I earnestly recommend to the farmers of these kingdoms, as more garden-like, and indeed preferable to every other, except in some few situations, as aforesaid. It is equally applicable to beans, cabbages, potatoes, and perhaps carrots, parsnips, peas, and tares.

1. *Preparation.*—In this county, there is no such thing as turnip-fallow: the land invariably produces a crop in the spring, before the preparation for turnips*. As soon as the preceding crop is off, the land is ploughed very thin, then harrowed, and the weeds, stubble, &c. raked into heaps and burnt. It is then cross-ploughed a full depth, harrowed, and the weeds raked and burnt as before; and lastly, it is ploughed into ridges of four or five yards wide, harrowed, then sown broadcast, and the seed covered by another harrowing.

stratum for its nourishment. Very often, the roots getting through the cultivated soil, are obliged to crawl about for food on the hard surface of the substratum, where nothing but starvation, and all her train of ills, is to be expected. The first object therefore, is to give a much greater depth of cultivated soil to the roots of the plants, which is most effectually done in one bout ridges, after the land is prepared, and the dung spread as usual. Mr. Mure's drill plough, with two mould boards at once going, forms the ridge with the dung in the centre of it, makes a drill, sows the seed, and covers it. The plants being reduced to proper distances with a short hoe, a man and an old horse with the same plough may hoe four acres a day, pare the sides and bottoms of the furrow, mix the soil, lay it up to the plants, and leave not a weed to be seen. Turnips so grown, exceed in weight per acre the broadcast method 50 per cent.—(See a plate, and description, in the *Annals of Agriculture*, vol. ix, p. 432 to 443).

* Generally of tares, early peas, or rye.—*J. M.*

For

For the method of sowing turnips on one bout ridges, (see the note in page 207, and the Northumberland and Cumberland Reports).

2. *Sort.* } Those sorts that root deep, and grow the
 3. *Steep.* } most under ground, or are moulded up,
 4. *Seed.* } are the more secure against frost. The straw-coloured turnip is much sweeter tasted, and the red more bitter, than any of the other colours; of which there are varieties in every field. The quantity of seed is rather under two pounds per acre, sown without steeping; but it would be better in a dry season to steep the seed, especially on late sowing.

5. *Time of Sowing.*—They are sown as early, during the months of July and August, as the ground can be got ready. The first sown produces the largest crops, and should be first eaten: the last sown will stand the frost better.

6. *Culture and Sale.*—Answered as above, as far as this county is concerned; but for more distant places, it may be useful to note, that when eaten by cattle in stalls, they produce about one shilling a ton more than when consumed by them in the open field. (In the field they pay from 2s. 6d. to 4s. 6d. a ton, *i. e.* a crop of twenty tons will produce, in beef and mutton, from 50s. to 4l. 10s. exclusive of the dung and urine, which is worth about 50s. more*). But this advantage is much more than drawn back, by the loss of the cattle's urine, and by the expence of carriage, attendance, and returning the dung on to the land, when greatly reduced both in its quantity and quality.

* The whole produce in the close is from 5l. to 7l. per acre.

During

In the operation of pulling up turnips within this county, the labourers always break the tap-root off. It is supposed not to be worth carriage, and the roots ought in every case to be broken off, for the sake of leaving the manure and mould which hangs about them, in the field. When they are wanted for spring feed, should Mr. Calverley's (of Hillingly, Sussex) method be found completely to preserve them through the months of March and April, and without a considerable diminution of their capacity for the feeding of cattle, it would be the highest folly in all turnip farmers not to avail themselves of it. I must own, that of its success I have much doubt. However, it deserves to be fully experimented. The method is, to stack and thatch the bulbs before they are frosted (in the same manner as potatoes are preserved in what are called pies) after having cut off and used the tops for winter feed. If this should not be found to answer, I would recommend a trial to be made of carting them during a hard frost, into one or more large heaps, laid on a bottom of ice, and mixed throughout with ice and snow, in sufficient quantity to preserve them in a frozen state as long as they may be wanted, and which would seldom be longer than the end of April. In this case they should be either put into a building, or covered with straw, heath, or fern; and such coat of thatch should be covered with earth, in the same manner as heaps (usually called pies) of potatoes are, in many places, preserved from frost. These frozen heaps would certainly preserve the turnip crops from being destroyed by the thaw which takes place at the breaking up of every severe frost, and on that account this method of saving them may be immensely valuable to the community.

When it might become necessary to make use of this frozen heap of turnips, they should be given to cattle,

after the frost had been extracted, by putting them in cold water.

The land may, in the foregoing manner, be cleared of turnips by the end of February, which will give the husbandmen more time to till their ground. It will save the land from being exhausted in the spring by turnips; will keep them sound, and capable of giving the utmost degree of nutrition to cattle, while greater crops of barley may be raised by being more early sown, and upon land in better heart.

The turnip has three powerful enemies, namely, the fly, the slug, and the black canker. The attack of the first may be known by the seed leaves having many brown spots, occasioned by the fly having eaten the fleshy and green part of the leaf, down to the fibres—these usually increase in number and size, till the plants are destroyed.

I believe the slug is even more destructive than the fly; the ravages of which are distinctly marked, by its feeding on the edges of the seed leaves, eating one piece after another, till the leaf is wholly consumed. On the view of a field of young turnips attacked by slugs, some of the leaves have lost a quarter, others an half, three-fourths, or the whole; so that the stalk only has been left. A flock of sheep kept in motion by a boy and a dog, and also night rolling, have been used as palliatives*.

The black caterpillar makes its attack on the rough leaf after the turnip-tops are considerably advanced; in which

* For the effect of train oil, in pushing turnips forward, tainting the seed leaf, and securing them from the fly and slug—see the fifth vol. of the Transactions of the Society of Arts, page 38; ninth vol. of Annals of Agriculture, page 389.—Water in which tobacco leaves have been steeped, might be showered over the land from the tail of a cart, to render the plants nauseous. Soot has been sown with the same intention.—*J. M.*

case ducks have proved effectual for destroying them, in the proportion of not fewer than four to an acre*.

Query—Whether any, or all, of these vermin, feed on the seeds of plants; and whether they might be destroyed by poisoning and sowing such seed?

The fly which produces the caterpillar, might be kept off by any thick offensive smoke being made to pass over the turnip field; but to discover the coming of the fly, would require more watchful attention than can be given in large concerns; nor would the wind be always favourable for the purpose. Perhaps the best method would be, for the farmer always to have in readiness a stock of barley chaff, sufficient in quantity to sow the whole of his turnip land, on the first appearance of either the caterpillar or the slug: it would be effectual against the slug immediately after being sown, and against the other, by shaking them from the plants to the ground by a light bush harrow †.

* For much information as to this caterpillar, see Marshall's Norfolk, vol. ii, page 291, &c.

† " Turnips are cultivated chiefly for the cow-keepers, who buy them at the distance of even sixteen miles from the metropolis. The price varies from three guineas and an half to eight guineas per acre, according to the distance, and goodness of the crop. Six guineas is a common price for a good crop at the distance of ten miles from London. Two years ago I had a field of five acres, for which I refused eight guineas per acre from a cow-keeper. The turnips grew on a part of Enfield-chase, which I had myself reclaimed from its natural wildness and sterility.

" The sale of the turnip crop to the cow-keepers, and the general practice of mowing meadow land for a second crop, will prevent the sheep husbandry from prevailing much in this district. The clover too is frequently sown to be cut green, instead of being grazed. A good crop will bring six guineas per acre."—*Dr. Wilkinson.*

The largest crops have sold as high as ten guineas, during each of the last three or four years; and other crops in proportion to their goodness. Ten pounds or guineas are common prices at this time (November 1796).—*J. M.*

" I sold twenty acres in the winter 1795-6 for two hundred guineas; and this autumn (1796), have sold my turnips at twelve guineas per acre. Distance twelve miles from London."—*Mr. Jenkins.*

For further observations on the effect of climate and soil, as to the broadcast and drill method of growing turnips—see potatoes and tillage.—*J. M.*

SECT. V.—CROPS NOT COMMONLY CULTIVATED.

I. COLOURS FOR DYING.

“ A substitute for madder, from our own indigenous plants, was introduced in the year 1789, into the nursery grounds of Mr. William Gordon, at Bow, by the discoverer, Dr. C. Gordon; he being authorized by the Lords of the Committee of Privy Council for Trade, to hire one or two acres of land for the cultivation of the madder plant, in order to ascertain to what degree it is capable of improvement, and at what expence it might be cultivated. Various experiments were made from time to time, to ascertain these facts, and they have been in general sufficiently satisfactory. The plant is found to increase, in all its parts, to at least one third more by cultivation, than when wild and uncultivated in the open fields, and that without injuring its colouring qualities. To effect this, however, a light, deep, and dry land, is indispensibly necessary; which, by a due management, equally plain, easy and simple, will, at the termination of the fourth year from the planting out, produce a crop of three to four tons on every acre. The colour that this root gives to woollen goods, when duly prepared, is truly elegant, and approaches nearer to the scarlet of cochineal than to the red of madder, which, in comparison, sinks to a species of unsightly brown. The top part of the plant answers the purposes of *weld*, and gives, particularly to cotton and linen, an elegant and durable yellow. The tops may be annually cut down, without prejudicing the roots,

roots, and may therefore be sent regularly to market, and made to reimburse the cultivator a portion of his expences. This is certainly a valuable discovery in the art of dying, and an important acquisition to the trade and commerce of Great Britain, as well as to the internal improvement of the country. But this gentleman's discoveries are not solely confined to his substitute for madder; he has also discovered the article of cudber, and that likewise from the indigenous plants of this country, of which article there are now many manufactories in the metropolis; particularly one erected only a few months ago (1793) in Westminster, and carried on under the eye of Mr. Modigliani of Lombard-street, and several other able and scientific men. This is not all, for I am credibly informed, that Dr. Gordon has extended his discoveries in the art of dying, to the whole circle of tints; and that he dyes fixed and elegant colours, at a cheap and easy rate, by means of such indigenous plants, as either abound spontaneously in the fields and forests of Great Britain, or may be easily cultivated in her gardens and nurseries, so as to supply, at all times, the utmost demand of trade.

“ To conceal these discoveries from foreigners, who might take advantage of the information, the classes of plants which have been found capable of producing these tinctures have not been named; and more particulars have not been disclosed, because they were conceived by me to be unnecessary, as a committee of the House of Commons has already enquired into the merits of these speculations, and received satisfactory information on the subject: and to this enquiry I therefore refer the attention of the Board for further particulars.”—*P. F.*

DIRECTIONS TO RAISE THE SUBSTITUTE FOR Madder FROM THE SEED, AND TO MANUFACTURE IT FOR MARKET.

“ The substitute for madder is an indigenous plant, or native of Great Britain, and effects a light, deep, and dry land. The root is the most marketable part of the plant, and runs deep into the ground, sometimes even to six feet, if not prevented by want of proper earth, or some other very material cause: so circumstanced, the tap or main root commonly divides into a greater number of smaller ones, many of which being lost in manufacturing the article for market, causes a short crop: in general, however, one acre of suitable and ordinary good land, being deep and well ploughed, may produce from three to four tons; and one ounce of the seeds, sown on beds, to be covered with glass frames in times of frost, will produce plants sufficient to plant out that acre.

“ The seed may be sown in April, and will come up in ten days, or a fortnight's time, and, in two months after, is fit to be planted out; which, for the convenience of hoeing, a labour that must be duly attended to for the first and second year, and to prevent the lateral roots from interfering one with another, should be done at the distance of eighteen or twenty inches square.

“ In about four years from the above period, the roots will, without any further trouble than occasionally hoeing, be arrived at their proper point of maturity, at least to that degree of perfection the suitability of the land to the plant can admit of, and therefore should be taken up; but in no greater quantity at any one time, than may be with ease cleaned of the earth, and in particular, of a dirty black skin, or bark, which hangs loosely about them,
being

being highly pernicious to the beauty and elegance of their colouring particles, and that may be effectually done by softly rincing them in pure, and, should convenience serve, running water. This being effected, and wiped thoroughly dry, they are immediately put into a stove, previously brought to that degree of heat which stops fermentation, without injuring, or any ways scorching the remaining fine bark. When thus perfectly cured, they are, without loss of time, brought to the mill, in order to prevent their imbibing the moisture of the air, which they greedily will, if permitted to do, and there put under a stone, on edge, to be ground down, and immediately casked up. The casks, during the time of filling, are, from time to time, to be duly and regularly pressed by weights as heavy as the casks can bear.

“ The longer the article remains in the cask, the dyers may like it the better; nor will they purchase madder until two or three years, or even more, thus casked up, if they can be otherwise served; and as the substitute has a very great affinity to madder, and its roots more solid by far than those of that article, it is to be presumed they must require an equal time “ to make in the cask,” as the dyers phrase it, that madder roots do.

“ The tops of the substitute, if cut down about the latter end of June, when nearly in full bloom, will answer all the purposes of weld, particularly in dying cotton and linen, and is to be cured and brought to market in the same manner as weld. It effectually curdles milk, and gives cheese a peculiar, but very agreeable flavour.

“ The scarlet of cochineal, and a specimen of the colour which the substitute gives to woollen goods, together with that given by madder to such, do all accompany this. Comparison will shew, that the colour of our substitute comes so very near the scarlet of the cochineal,

that it loses but little by the comparison; whereas, the colour which madder gives is, by a like comparison, visibly sunk towards a brown.

“Madder is sold at the average price of six-pence per pound, or 56l. per ton; and cochineal at fifteen shillings per pound, or 1680l. per ton, which amounts to thirty times the price of madder; yet a pound of madder dyes two pounds of cloth a good deep colour; and a pound of cochineal dyes but sixteen pounds of the same cloth equally deep; which demonstrates that cochineal is impregnated with only eight times the quantity of dying or colouring particles that madder is; nor is its colour at all so fixed as that of madder; notwithstanding which the madder, sufficient to dye that quantity of cloth, or sixteen pounds, may be purchased for four shillings; when the cochineal necessary to dye the same quantity of cloth costs fifteen shillings. It is evident, then, upon the whole, that it is the scarlet of the cochineal which makes it so valuable at market, for, in times of war, it occasionally sells from thirty to thirty-two shillings per pound, and not altogether its being so replete with dying particles. Therefore, as the colour of our substitute comes so close to the scarlet of cochineal, and is at the same time infinitely more fixed, may it not be reasonably presumed, that our substitute will, in the course of a few years hence, lower the value of that high-priced dying ware, to the ease of the manufacturers, and profit of the most industrious and ingenious farmers.”—(*Appendix of Foot's Report*).

II. RAPE, OR COLE,

Is not commonly cultivated in this county, though a plant which produces green food in great quantity, of the most nutritious quality, and comes to perfection in March and April; months which, more than all others, try the skill of the farmer for the means of supporting a large stock of live cattle.

Where this crop is consumed green on the soil, it is equally beneficial to the landlord and his tenant; but suffering it to perfect its seed, would be putting a considerable sum of money into the pocket of the tenant at the certain expence of his landlord.

III. LIQUORICE,

Is cultivated by gardeners at the Neat-houses near Tothil-fields, to the extent of a few acres,

IV. LUCERN.

THERE are several persons in this county who cultivate an acre or two, or three, of lucern, for giving it green to horses: always in drills, in garden-like cleanness, and highly manured. It is usually mown four times in a summer.

V. CHICORY.

V. CHICORY.

I HAVE not been informed of any being grown in Middlesex ; and have tried it only on a small bed in a garden, where it grew with great luxuriance, and bore repeated cuttings in the course of a summer. But as it is said to require a much lighter soil than any which I occupied, and as my object was to lay my land down for the growing of hay, I did not extend its culture.

VI. TURNIP-ROOTED CABBAGE,

Is another plant which is naturally adopted for the support of cattle during the same period of scarcity, though not raised in any part of this county. The best method of doing it, seems to be in one bout ridges, of the same kind as I have recommended for turnips, potatoes, &c.*

VII. THE SWEDISH TURNIP,

Is not grown in this county, though it seems to deserve a place on every farm where spring feed for the support of live stock is an object of importance, as it may unquestionably be preserved in pies, during the months of March and April.

* See Gloucestershire Report, 4to. p. 28 ; and various volumes of the Transactions of the London Society of Arts, &c.

CHAPTER VIII.

G R A S S.

SECT. I.—MEADOWS AND PASTURES.

NATURAL meadows are no where to be found, as all grass land which is in a state of nature, or uncultivated, is universally depastured.

Natural pastures are, of course, the most wretched of all grass land; and, in this county, are only to be met with in commons.

CULTIVATED MEADOWS AND PASTURES.

1st, *Near the River Lea*.—There is some excellent grass land on the Middlesex side of this river, lying in the parishes of Enfield, Edmonton, Tottenham, &c. containing about one thousand acres; most of which is divided, by land marks, among a great number of proprietors, in pieces containing from a rood to four or five acres each. The meadows are opened for the reception of the cattle of every inhabitant of those parishes, from the 12th of August in every year, until the 5th of April in the following year. On the latter day the cattle are taken off; and soon afterwards the ground is prepared for a crop of hay, which it yields in July.

This tract of land is occasionally flooded every winter; and also once in two or three years, in the summer, by
water

water impregnated with manure, brought from the well-dressed and chalky lands of Hertfordshire. If these occasional floods were made to pass off in a few days, or so soon as they had deposited their enriching particles on the land, they would promote a very high degree of fertility; but unfortunately, the drainage is so interrupted from Stratford-le-bow to the Thames, that *the water is detained much too long on the land*; and, owing to the very nature of common meadows and pastures, the sewers, ditches, and drains, are so shamefully neglected, that *the soil is chilled, the best grasses destroyed, and a worthless herbage substituted in their place*.

These meadows are said to produce about *a ton of ordinary hay per acre*, and are lett for about twenty-five shillings on an average. If they were inclosed and embanked, and a proper drainage obtained, they would be as well worth three or four pounds per acre.

2dly, Near the River Thames.—In many of the parishes on the Middlesex border of this river also, there are meadows and pastures, though of small extent, which are occasionally laid under water by floods in winter; and sometimes, though in a less degree, in summer. Perhaps there may be one hundred acres which are sometimes overflowed by particularly high tides. The water drains very readily off much of this land at the reflux of the tide, particularly so much of it as lies adjoining to the river. But some parts of it are situated rather more distant from the Thames, and the surface being nearly level, the water is more interrupted, and consequently runs very slowly off; although these meadows generally have ditches along the *lower* side of them, to assist in draining off such part of the water as remains after the flood and tide have retired.

On

Wherever the water remains too long, the produce is coarse, poor, and watery, mixed with flags; and when made into hay, in the best manner, it is sandy, and of little value.

3dly, *On the borders of the River Coln.*—There are extensive meadows and pastures on the borders of this river, the whole way from Staines to Harefield. The soil is of a black, peaty, tender nature, and but little above the level of the river. Such of them as are inclosed and drained, are very fertile; but much the greater part of them are *Lammas-meads*, and one of the necessary consequences is, that *the ditches* are so much neglected as to be nearly grown up.

The pastures are more than half covered with mole and ant hills; and, in some places, gravel has been dug from them in such quantities as to leave them under water.

The drainage being wholly neglected, the land is consequently filled with water, and thereby rendered *unsound*. No farmer would hire it, if he were obliged to continue it in its present condition, *at any price*; but, if it were inclosed, and properly drained, the produce would yield from five to eight pounds per acre.

The whole of the several tracts of grass land included in the foregoing description, contain about 2500 acres. They are subject to be flooded by sudden and heavy rains, even during the spring and summer months; and, when that happens early in the year, the water deposits among the growing grass quantities of sand, mud, slime, sticks, and weeds, which afterwards impede the operations of the scythe; and, above all, reduces the hay in value below the price of straw. *When such a flood takes place after the grass is cut down, and before the hay is carried away, it frequently floats the whole summer's produce on the surface of the*

the water. The occupiers of these lands have only the *entire* produce of them four months in a year; which, together with the risk of suffering such serious losses during that time, keeps down the rent and produce of this soil shamefully below that rank in the scale of productiveness, which, from its natural fertility, if aided only by a little art, it would be entitled to possess*.

These tracts of land are formed of the rich particles of calcarious and animal matter, collected from a great extent of chalky country, and deposited here by the floods. As most of it is on a subsoil of the gravel of flints, dry and sound, it requires neither uncommon skill, nor immense expence, to lay it properly dry in every season. A very low embankment against the river, would be the means of keeping out the floods; and if the present ditches and drains were perfectly cleansed, and were assisted by such sluices as are usual in all cases of embankment, they would completely disembogue all the superfluous water, and leave the land sufficiently dry. By opening the flood-gates at suitable times, the land might be laid under water once or twice during the autumn and spring; which, on being drained off again, would leave a rich deposit of fertilizing matter, and make this whole district perpetually fruitful. It might then yield its great produce towards manuring and enriching the neighbouring land†.

The power requisite for this, could only be derived from the authority of parliament. To make the improvement complete, the common fields should be inclosed, and every man's land laid together. If this were done, there

* In Norfolk, too, the coarse, benty, rushy, reedy trash, which is the natural produce of their marshy grass lands, is very disgraceful to the *tenantry*, but still more to the *landlords and stewards* of that county.—*J. M.*

† There would also be occasion for a small number of fen mills, in the whole district, to raise several small streams into the rivers in times of flood.—*J. M.*

would

would be many parcels of land sufficiently large to induce the proprietors to embank their own from the rest; by which means they might flood it at pleasure. At any rate, much of the district would thus be fitted for the richest kitchen-gardens, fruit-gardens, and nursery-grounds; and all the remainder would make the best meadow in the county; perfectly fit for the production of *two or three* crops of *cow hay* in every year, or of *one* crop of *hay* for *horses*, and of one more for cows.

4thly, The Isle of Dogs.—The isle of Dogs, containing about 1000 acres, lies at the south-east corner of this county, and would be overflowed every tide, were it not secured by an embankment. This ground is divided by ditches, which empty themselves through sluices, at low water, into the Thames, and keep this tract of land sufficiently dry. It is perhaps the richest grass in the county, but if it were the most barren in the kingdom, it might be enriched by the easiest of all possible means, namely, by only opening the sluices to admit the tide, and thereby lay the land under water; and, after the water had remained long enough for the rich substances which are constantly floating in the river so near the metropolis, to have subsided, permitting the water to drain off by the same sluices, into the Thames again. This operation repeated a few times, would not fail to improve the land in a very high degree.

5thly, Upland Meadows and Pastures.—About seven-eighths of this county, or 70,000 acres, consist of grass-land of this kind, great part, or nearly the whole of which, exhibits the usual marks of the plough (ridge and furrow), and, owing to the soil being mostly a loamy yellow clay, is very tough and gluey, mixed with the gravel of flints, which

which is more frequently contained in a kind of bason than equally mixed in any certain proportion. Such being, I apprehend, the original soil, it was as untractable and ill calculated for the plough as the greater part of Enfield-chase is at this time ; but, being cleared of trash, and laid down to grass, with the assistance of the town dung, it became, and has long continued to be, meadow of the first quality. This land is still manured in a greater degree than any other meadow (not watered) in this kingdom. Care is also taken to prevent even the least poaching, by removing the heavy cattle about the month of November, or so soon as rain falls in quantity sufficient to soften the ground, *as it is well known, that wherever a bullock makes a hole with his foot in this kind of soil, it holds water, and totally destroys every vestige of herbage*, which is not quite replaced till several years after the hole is grown up. The rest of the after-grass is eaten by sheep, which are continued till the middle of February, about which time they are sent away. Taking the cattle so soon off the meadows, promotes a quick vegetation, a plentiful crop, and an early hay harvest*.

Manure is invariably laid on meadow land about the month of October, while it is sufficiently dry to bear the

* " At Mill-hill, in the parish of Hendon, (where I farmed a little land about twenty years ago) the general price of after-grass was ten shillings an acre, which was lett on the condition of taking out all heavy cattle at Michaelmas, or as soon after as the rains fell. Sheep were let remain till about Candlemas. There is a remarkable difference between the management of after-grass there and in most of the northern counties. In Middlesex, the cattle are turned in directly after mowing : in the north, the grass is almost invariably kept till October or November, or even later, when it is come to a good head again, which is called eddish (probably from eatage), and is much depended on for finishing fat stock. Some of the fat cheese is likewise made from the eddish, called eddish cheese. I don't pretend to decide which is the better practice. I have observed the eddish in wet weather miserably trod and soiled, so that much, I think, must be wasted."—*Sir Rich. Sutton*.

drawing of loaded carts without injury; and when the heat of the day is so moderated as not to exhale the volatile parts of the dung.

This large tract or district of *clay land*, would have been of little or no value *in a state of aration*. The difficulty of tilling it; the expensive teams which must have been employed on it; the few months in every year when it could be ploughed with success; and the *uncertain* produce of such a soil; are circumstances which *would have kept down its value to little or nothing*. But mark the difference! *laying it down to permanent grass, has been the means of advancing its rent to 3l. an acre, and of its producing in a medium of seasons, two tons of hay per acre, of the highest quality in the world for the feed of horses.*

Meadow land in the occupation of *cow-keepers*, is generally mown two or three times in a summer. Their great number of cows enable them to dress it every year, *and they are studious to procure their hay of a soft grassy quality*, not letting it stand till the seedling stems rise, but mowing it two, three, or four weeks sooner than it would be advisable to do for the support of horses. This land lies near the town, as at Islington, Mary-le-bonne, Paddington, &c. and is usually mown the first time in each summer early in May*.

There is very little land in this county pastured, except commons; part of gentlemen's parks; and here and there two or three acres, for the run of a cow or two to supply milk and butter for the use of the families that keep them.

* For rich grazing land, the management, produce, expence and profit, see the Somerset quarto Report, pages 103 and 104.

SECT. II.—SOWN GRASSES.

I. RED CLOVER,

Is grown in the *inclosed arable land* of this county, in regular succession with corn crops; and would most likely be so over *all* the arable land, if the *common fields* were inclosed; but the *barbarous tenure* of such land very nearly *hinders the culture of this, and every other of the most valuable plants, and cramps almost all the other operations of good farming.* The instances are very rare indeed, of meeting with a piece of *clover in common fields*; though, *round Shepperton*, there are sometimes a few acres which are preserved, by spreading long litter over the young plants soon after the corn is off, or at least before the fields are common for sheep, and which is done to keep them from feeding it too close, or pulling it up by the roots.

1. *Preparation.*—This plant has the uncommon great merit of not requiring any extra preparation of the soil, nor any expence above the price of the seed.

2. *Seed—(quantity).*—Twelve or fifteen pounds per acre is the quantity usually sown; though it ought to vary with the nature of the land. *In rich land, every seed vegetates, and comes to maturity. On land that is rather poor, a portion, perhaps a quarter of the seed, dies after vegetating. On land that is much exhausted, or naturally very poor, a great many of the young plants die, and much of the seed does not even vegetate at all. In order to make up for such great failure in the success of the plants, the quantity of seed should be increased in proportion to the poverty of the soil, and decreased in proportion to the richness of it, and*
also

also with regard to the suitableness of the crop to the nature of the land. Twelve pounds sown with barley, on a loamy sand, clean and in good heart, is sufficient; and sixteen or eighteen pounds will not be too much with wheat, in a stiff loam on a clay bottom. The London markets require that it should not be mixed with rye-grass, or any other grass, as such mixture hurts the sale, and reduces the price of the hay considerably.

3. *Steep.*—Not any used, though it would unquestionably force the seed into a more general and quick vegetation; and many crops are lost for the want of it.

4. *Time of Sowing.*—Among spring corn, it is sown so as to allow short tined harrows that are covering in the corn, to go once, or at most only twice, in a place, after the clover is sown, to give it thereby a thin covering, as the seed, being small, round and heavy, may easily be buried at too great a depth. When sown among wheat, the best practice is to sow it as soon after the middle of March as the land is sufficiently dry to bear harrowing. After sowing, in both cases, the land should be rolled*.

5. *Cultivation while growing.*—If the land be in good heart, none is necessary; though the plants, while they are in seedling-leaf, should be attended to every day, for the purpose of observing whether they are attacked by slugs, &c. which are too frequently as fatal and destructive to clover, while in this tender state, as they are

* "When clover is sown on wheat in strong land, it is particularly necessary to harrow and roll."—*Northumberland Report.*

With this observation my own experience perfectly accords. It is too frequently sown, and only rolled down: this is a bad practice, and can only succeed on strong lands in wet summers.—*J. M.*

to turnips; and the same means of prevention should be adopted*.

If it is grown on common-field land, it should, so soon as the corn is off, be covered with long litter from the stable, but not hot, in order to preserve it from the bite of sheep.

In all cases where the soil is not in good heart, the whole should be manured, or at least as much of it as possible. Some sandy lands may be dry enough to bear its being done in the spring; but on all loams that are, from their adhesion, subject to poach or mortar, it should be done in the autumn, while the land is so dry as to bear the drawing of loaded carts over it without receiving any injury. Whoever dungs his clover in autumn, will find that it will not die away in winter, as it often does under a more parsimonious, but less politic management†.

6. *Harvesting*.—Every where near London, it is mown when the greatest number of heads are in blossom; but rather sooner than later, as the error of mowing the first crop too early, would be fully compensated by the increase of the second. The proper time for mowing it, may be known by observing the bottom of the plants; and care

* I once lost eleven acres of young clover, in three or four nights, by slugs.—*J. M.*

† "I have spread long litter, hot and smoaking from the stable dung-hill, on my young clovers, soon after the corn was off, which thinned the plants, by killing some of them, but the rest grew the stronger, and produced an extraordinary great crop. I still am an advocate for manuring young clover in autumn, but shall do it with dung previously well rotted."
—*Mr. Jenkins.*

This appears to me to have been owing more to the dung being hot and putrid, and not being well and equally spread, than to any thing else. It is the common practice in my neighbourhood, to manure the clovers in autumn, and its good effects are so evident as to render the utility of the practice incontrovertible.—*J. M.*

should

should be taken to mow it when the lowest leaves begin to shew symptoms of decay, by dropping off; for if the crop is suffered to stand longer, the consequence will be, that it will lose more at bottom than it would gain at top. This takes place near, or soon after, the middle of June.

When it is mown, the swaths should not be spread, as is the practice with meadow hay, but suffered to lie as the scythe leaves them, until they are dried about two-thirds through, which, if the weather proves favourable, will be in about three days. If the weather should then look promising, the swaths may be turned with rakes immediately after the dew is off; and, if no rain falls, it will be fit to cock the next morning (the fourth day) as soon as the dew is gone; and may be carried in directly.

If this is done as soon as the dew is off, the leaves will be just sufficiently tough to preserve them, but when this operation is omitted in the morning, and performed in the heat of the day, the leaves will be too dry, reduced to dust, and lost in the business of heaping and loading. If, however, it is heaped in good time, the loading and stacking may go on all the day. When part of it is become rather too dry, there is an art in putting the rows into heaps, to avoid rubbing the leaves off. This is only familiar to some of the best work-people, and is rather difficult to describe, but it is done by very lightly rolling the swaths over with rather larger forks than usual, keeping it whole or together, laying it lightly into the cock, and being careful to avoid breaking and tossing it about, shoving it on the ground, or beating it down.

The cattle should be kept out of the field, and the second crop will be in full blossom, and ready for the scythe, so as to be mown the last week in August. This crop must be harvested as the first, and should not be longer delayed, both on account of its losing in weight, as

aforesaid, and of getting it into stack before the equinoctial rains set in. After this, there will be a little sheep-feed previous to ploughing the land up*.

7. *Produce.*—A showery summer produces great crops, and every dry one struts them to one half. The natural quality of the soil has a considerable effect, and its being in an high or low state of cultivation, has still more; but on the general average of years and soils in this county, the two cuttings produce about three loads of marketable hay; which, for the last fifteen or twenty years, may have yielded twelve guineas per acre†.

8. *How disposed of.*—Most of it is sold and delivered in London for the support of draught horses; and it is the general opinion, that it is more nourishing than any other hay, except sainfoin, and sells at about fifteen shillings a ton higher than meadow hay.

Clover is the most profitable plant grown on any farm, and in every case, when it is destroyed by vermin, such as the fly, slug, &c. the corn stubble should be ploughed down soon after the corn is reaped, and the land sown with tares.

This plant grows a full crop in all the arable lands of this country, from the sands of Norfolk to the clays of Cleveland and Sussex. Various soils that have been exhausted by corn, and not much accustomed to clover,

* Mr. Lemon, of Loddon (Norfolk) in 1793, fed a thick plant of clover down by his stock of cows, sheep and horses, during the month of May. He then let it grow for a crop of seed, and it produced him four bushels per acre, which he sold at thirty-six shillings per bushel, or seven pounds four shillings per acre. The seed was of the best quality, and in 1795 would have produced five guineas a bushel. His father once had eight bushels per acre.—*J. M.*

† I have had clover hay that produced me twenty pounds an acre.—*J. M.*

have been so much restored by it, as to produce a good crop of wheat; but to do this, every means should be used to secure a full crop, as that is an excellent preparation for corn, and seldom fails of ensuring a considerable produce, arising from shade, smother, and putrefaction, the natural and constant attendants of full grown clover. In some poor cases, it may be advisable to permit both the first and second crops of clover to be eaten green upon the land, by sheep and bullocks; being mown, and given them to feed, in the same manner as I have recommended to be done with tares. It sometimes may be advisable to make hay of the first crop, and soil the second, or *vice versa*.

“Clover is sometimes employed in fattening sheep, from the beginning of April till the end of May (by which time, or sooner, they may be sold to the butcher), then kept uneaten till July, and mown for hay: in about two or three weeks after the said hay is off, sheep intended to be fattened with turnips, should be turned in, and kept there till they go to turnips. With the exception of uncommon rich marshes, there is no pasture that will support so much stock as clover and rye-grass.”—(*Messrs. Culley*),

EXPENCES,

15 lb. of red clover, and 5 lb. of white, at 6d.	} £. s. d.	
is 10s. sowing the seed and repairing hedge-		0 13 0
rows and gates 3s. together - -	} 0 15 0	
Mowing, making, team, stacking, straw and labour, to thatching the stack - -		
		£. 1 8 0
Dung, or top dressing, or showering with liquid	} 1 10 0	
manure, when used - - -		
Carry forward - - -		£. 2 18 0
P 4		Brought

Brought forward	-	-	£.2 18 0
Cutting, tying, and marketing, 4s. per load,	}	0 8 0	
but say per acre			
Total expences of the first crop per acre	-		£.3 6 0
The 2d crop.—Mowing and making as afore-	}	0 19 0	
said, 15s. cutting, binding, and marketing, as			
aforesaid, 4s. together			
Total expences of the year	-		£.4 5 0

THE PRODUCE AND PROFIT OF A CROP OF CLOVER.

The first crop varies from one load (of 18 cwt.) to three.

The second crop from half a load to two loads.

Together, from one load and an half to five loads.

About three loads, I think, would average the county.

The price in the London markets would average about fifteen shillings a load higher than meadow hay; and for the last three or four years it has produced about 5l. 15s. but suppose it only at 5l. 10s. per load, and the hay would produce 16l. 10s. per acre.

After the second crop is off the land, there	}	£. s. d.	16 15 0
is usually a little sheep-feed, worth about			
five shillings an acre, which makes the en-			
tire produce of an acre of clover -			
Deduct the expences of the whole crop, as	}		4 5 0
before stated - - - -			

Remains per acre	-	-	-	-	£.12 10 0
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II. SAINFOIN.

II. SAINFOIN,

Is not grown in any part of this county; but the superior value of its hay is well known in the London markets: *it produces at least a guinea a ton more than meadow hay equally well cured.* It is brought from the chalk-hills of Surrey and Kent, and cannot be too much recommended to the owners and occupiers of all thin skinned, limestone, and chalk soils in the kingdom.

This is a valuable plant, and requires a dry and strongly calcarious soil: such as have a subsoil of chalk, of limestone, or perhaps of shell marl, are the most suitable for its cultivation*. I do not know of any land in Middlesex that is particularly proper for it.

With all the improvers of chalky downs and thin limestone soils, this should be the principal plant. Tares, turnips, clover, should all be fed green, and in the field, to prepare the soil with rich substances for being laid down with sainfoin. It would amply repay to the end of a twenty-one years' lease, by an annual produce of two tons of hay per acre, of the highest quality for the feeding of cattle, and

* Sainfoin should be the principal crop on all lands that have depth of dry calcarious soil.—(*Norfolk Report*).

Two hundred and sixty-five waggon loads of hay cut from one hundred acres, at Holkham (Norfolk) in 1793, worth five guineas each, some in the neighbourhood being sold at that price.—(*Annals of Agriculture*, vol. xxi, page 125).

"Sainfoin (says Mr. Claridge) would afford a great supply of hay, if sown on the poorest and most hilly parts of the county of Dorset;" and he advises the landlords to "allow the tenants the cost of the seed, which is as high as thirty shillings an acre, and too expensive for the tenants to pay."—As well might he recommend to the landlords to plough, manure, and sow the farms, and let the tenants reap the produce. He must be very short-sighted, who could say of the open and uninclosed poor downs, "he does not see that any improvement can be made."—*J. M.*

the

the raising mountains of the richest dung. What an occupier should always remember is, that rich land makes wealthy farmers.

III. LAYING ARABLE LAND DOWN TO GRASS.

THE most usual method in this county, is to manure well, and to cleanse the soil thoroughly with hoeing crops, one year previous to sowing hay-seeds with barley or oats. In cases where the soil is so rich that there might be some risk in sowing a full crop of corn, by which the grass would be smothered, less corn is sown, even below one half the usual quantity of seed, in order that it may serve the double purpose of a nurse to rear up the young plants, and a shade against the rays of too hot a sun. When the corn is carried off, the young crop of grass is but little fed during autumn; but it is heavily rolled in the following spring, in order to press the soil home to the roots; and it is then treated as permanent grass.

The foregoing method is perfectly unexceptionable, as to all land that has been well supplied with manure. Where it is known that the land is not so highly conditioned, the operation would be equally successful by cleansing the ground well after a crop of winter tares had been fed upon it; then laying on manure, ploughing it in with a very thin furrow, and in August or September sowing grass-seeds without corn. The produce will be a most abundant crop of hay (though rather coarse) the next summer*.

* I have changed much land from arable to grass, by both these methods, with equal success, except in a single instance, which convinced me that the trefoils will not stand a severe winter, when sown late in September.—J.M.

To procure proper seeds for the purpose, is a very difficult part of the business. Large quantities are sold at ten-pence per bushel, at the royal mews, Charing-cross; where the *best hay* is consumed, consequently it is the most likely place to procure the *best seeds*; and certainly, upon examination, they look particularly bright and well; but this appearance is principally owing to the greater part consisting of blossoms, instead of seeds; the reason of which must be, that the hay was made while the grass was in blossom, before the bulk of the seeds were perfected; so that, probably among twenty bushels of these pretended seeds, there is not really contained more than two pecks in a good and perfect state. But then they are of the earliest kind, and will generally consist of the meadow fox-tail. This grass is of great value, and its seeds may be collected with ease, and in plenty, from the swaths, during mowing time, by children. But for a general assemblage of meadow grasses, the best way is to *save for seed* a piece of fine old meadow, that is known to abound with the best sort of grasses, by letting it stand about three or four weeks longer than usual, or until it be ripe. Then mow the grass, and thrash it, without suffering it to heat in the stack; and during the autumn of the same year, sow the land you intend to lay down with the seeds thus procured. To which add for every acre, 10 lb. of white clover, 3 lb. of yellow clover, 2 lb. of red honey-suckle, 5 lb. of timothy, 1 lb. of ribwort, and 2 or 3 lb. of burnet; together with soft-grass, fox-tail, rye-grass (and, in some cases, sainfoin), or any other meadow grasses that may be obtainable*.

* Plants with fibrous roots, should be accompanied by such as have a tap-root, in order that, growing at different depths, they may find their respective nourishment with the least injury to each other.—J. M.

Farms on the western coast should, I think, after being well drained, be laid pretty generally down with grass-seeds. The humidity of the climate in that district of the island, is certainly unfavourable to the general growth of corn; though the drier lands in this situation are excellent for root crops. Grass should undoubtedly be the staple; roots might be grown to clean and renovate the land, and one crop of corn to lay down with. This would keep all the west in a constant high state of fertility.

Mr. Marshall very justly observes, “ that grasses improve the land, and those who wisely adhere to having a large proportion of their farm in them, may boast of a constant plenty of crops. It is the subterfuge of ignorance or knaves, to say that grasses do not thrive in their lands; but the true reason is, because they do not lay the lands in proper condition, nor with proper grasses and good seeds; for certain it is, that where corn grows, there grasses may grow also; and that they are, when properly managed, very profitable to the farmer, let his land be whatever it will, as they keep the land constantly in good heart, and so afford the most constant and rich produce to the cultivator.”

I am sorry to say, it is the practice of *some* farmers, in most other counties, to continue sowing corn so long as the land will produce any, and then to apply to the landlord or his steward, saying that they are ready to lay such a field (thus shamefully exhausted!) down to grass, provided he will give them permission to plough up an equal quantity of old grass land. In this application they too often succeed; and thus they go on ruining one field after another. This, I believe, is seldom the practice in Middlesex.

SECT. III.—HAY-MAKING.

THIS branch of the rural art has, by the farmers of Middlesex, been brought to a degree of perfection altogether unequalled by any other part of the kingdom. The neat husbandry, and superior skill and management, that are so much, and justly, admired in the *arable* farmers of the best cultivated districts, may, with equal justice and propriety, be said to belong, in a very eminent degree, to the *hay* farmers of Middlesex: for by them, may very fairly be claimed the merit of having reduced the art of making good hay to a regular system; which, after having stood the test of long practice and experience, is found to be attended with the most desirable success. Even in the most unfavourable weather, the hay made according to the Middlesex manner, is superior to that made by any other method, under similar circumstances. It is to be regretted, that this very excellent practice has not yet, except in a very few instances, travelled beyond the borders of the county. But as it most justly deserves the attention and imitation of farmers in other districts, I shall, for their information, endeavour minutely to describe the method in which the Middlesex farmers make their hay.

In order that the subject may be more clearly understood, I shall relate the particular operations of each day, during the whole process, from the moment in which the mower first applies his scythe, to that in which the hay is secured either in the barn or in the stack. Before I enter more immediately on this task, I would just premise a few observations, viz. when the grass is nearly fit for mowing, the Middlesex farmer endeavours to select the best mowers, in number proportioned to the quantity of his grass, and the length of time it would be advisable to have it in hand

hand—which having done, he letts it out, as piece-work, or to be mown by the acre*.

About the same time he provides five hay-makers (men and women†) to each mower. These last are paid by the day—the men attending from six till six; but the women only from eight till six:—for an extra hour or so in the evening, when the business requires dispatch, they receive a proportionate allowance.

The mowers usually begin their work at three, four, or five o'clock in the morning, and continue to labour till seven or eight at night; resting an hour or two in the middle of the day.

Every hay-maker is expected to come provided with a fork and a rake of his own; but when the grass is ready, and labourers scarce, the farmer is frequently obliged to provide both; but for the most part only the rake.

Every part of the operation is carried on with forks, except clearing the ground, which is done with rakes; and loading the carts, which is done by hand.

Having premised so much, I now come to the description of the business of the

First Day.—All the grass mown *before* nine o'clock in the morning, is tedded (or spread), and great care taken to shake it out of every lump, and to strew it evenly over all the ground. Soon afterwards it is turned, with the same degree of care and attention; and if, from the number of hands, they are able to turn the whole again, they do so, or at least as much of it as they can, till twelve or one o'clock, at which time they dine. The first thing to

* Each man mows from an acre and an half to an acre and three quarters per day; some there are, who do two acres per day, during the whole season.—*J. M.*

† Including loaders, pitchers and stackers, and all others.—*J. M.*

be done after dinner, is to rake it into what are called *single windrows**; and the last operation of this day is to put it into grass-cocks.

Second Day.—The business of this day commences with tedding all the grass that was mown the first day *after* nine o'clock, and all that was mown this day *before* nine o'clock. Next, the grass-cocks are to be well shaken out into staddles (or separate plats) of five or six yards diameter. If the crop should be so thin and light as to leave the spaces between these staddles rather large, such spaces must be immediately raked clean, and the rakings mixed with the other hay, in order to its all drying of a uniform colour. The next business is to turn the staddles, and after that to turn the grass that was tedded in the first part of the morning, once or twice, in the manner described for the first day. This should all be done before twelve or one o'clock, so that the whole may lie to dry, while the work-people are at dinner. After dinner, the first thing to be done is, to rake the staddles into *double windrows*†; next, to rake the grass into *single windrows*; then the double windrows are put into bastard-cocks; and lastly, the single windrows are put into grass-cocks. This completes the work of the second day.

Third Day.—The grass mown and not spread on the second day, and also that mown in the early part of this day, is first to be tedded in the morning; and then the grass-cocks are to be spread into staddles, as before,

* That is, they all rake in such a manner, as that each person makes a row, which rows are three or four feet apart.—*J. M.*

† In doing which, every two persons rake the hay in opposite directions, or towards each other, and by that means form a row between them of double the size of a single windrow. Each of these double windrows are about six or eight feet distant from each other.—*J. M.*

and

and the bastard-cocks into staddles of less extent. These lesser staddles, though last spread, are first turned, then those which were in grass-cocks; and next the grass is turned once or twice before twelve or one o'clock, when the people go to dinner as usual. If the weather has proved sunny and fine, the hay which was last night in bastard-cocks, will this afternoon be in a proper state to be carried*; but if the weather should, on the contrary, have been cool and cloudy, no part of it probably will be fit to carry. In that case, the first thing set about after dinner, is to rake that which was in grass-cocks last night into double windrows; then the grass which was this morning spread from the swaths, into single windrows. After this, the hay which was last night in bastard-cocks is made up into full sized cocks, and care taken to rake the hay up clean, and also to put the rakings upon the top of each cock. Next, the double windrows are put into bastard-cocks, and the single windrows into grass-cocks, as on the preceding days.

Fourth Day.—On this day the great cocks, just mentioned, are usually carried before dinner. The other operations of the day are such, and in the same order, as before described, and are continued daily until the hay harvest is completed.

In the course of hay-making, the grass should, as much as possible, be protected both day and night, against rain and dew, by cocking. Care should also be taken to proportion the number of hay-makers to that of the mowers, so that there may not be more grass in hand, at any one time, than can be managed according to the foregoing process. This proportion is about twenty hay-makers (of which number twelve may be women) to four

* It seldom happens in dry weather, but that it may be carried on the third day.—*J. M.*

mowers: the latter are sometimes taken half a day to assist the former. But in hot, windy, or very drying weather, a greater proportion of hay-makers will be required, than when the weather is cloudy and cool.

It is particularly necessary to guard against spreading more hay than the number of hands can get into cock the same day, or before rain. In showery and uncertain weather, the grass may sometimes be suffered to lie three, four, or even five days in swath. But before it has lain long enough for the under side of the swath to become yellow (which, if suffered to lie long, would be the case), particular care should be taken to turn the swaths with the heads of the rakes. In this state it will cure so much in about two days, as only to require being tedded a few hours, when the weather is fine, previous to its being put together, and carried. In this manner, hay may be made and stacked at a small expence, and of a good colour; but the tops and bottoms of the grass are insufficiently separated by it.

There are no hay-stacks more neatly formed, nor better secured, than those of Middlesex. At every vacant time, while the stack is carrying up, the men are employed in pulling it, with their hands, into a proper shape; and, about a week after it is finished, the whole roof is properly thatched, and then secured from receiving any damage from the wind, by means of a straw rope, extended along the eaves, up the ends, and near the ridge. The ends of the thatch are afterwards cut evenly below the eaves of the stack, just of sufficient length for the rain-water to drip quite clear of the hay. When the stack happens to be placed in a situation which may be suspected of being too damp in the winter, a trench, of about six or eight inches deep, is dug round, and nearly close to it, which serves to convey all the water from the spot, and renders it perfectly dry and secure.

In the neighbourhood of Harrow, Hendon, and Finchley, there are many hay-barns capable of holding from 30 to 50, and some even 100, loads of hay. *They are found to be extremely useful and convenient during a catching and unsettled hay-harvest*, and also at other seasons of the year. In wet and windy weather, they afford an opportunity of cutting, weighing, and binding hay; none of which operations could, at such a time, be performed out of doors.* The farmers whom I have consulted on this subject, agree that *hay may be put together earlier, even by a day, in a barn, than it would be safe to do in a stack.* They advise, however, that the sides of the mow should be raked or pulled clear of the quartering of the barn; and, when thus managed, they are of opinion that the hay will be as good in the barn as in the stack.

Mr. Marsh, of Hendon, observes, that hay put into barns is apt to be dusty on the sides next the boards; and, that from the smallness of the quantity put together, it has too much outside, and consequently subject to be over dry.

In this case, he says, it should be sold before Lady-day. These objections, I cannot but think, are, in a great measure unfounded. The second can certainly only happen where the barns are too small; and as to the others, I can answer, that I have had three barns at a time full of hay: the boards and quartering were swept clean immediately

* In the very common case of approaching rain when the hay is fit to be carried, every nerve is exerted to secure as much of it as possible; and that is certainly best done by getting all the carts loaded and drawn into the barns, and the hay quickly pitched on to the mows, and there left in the lump to be spread at a time of less bustle, at least from so many of the carts as the time and weather will admit of being re-loaded, and again drawn into the barns. When rain falls, no apprehension need be entertained, for, by only shutting the doors, the hay is effectually secured against even the dews. In case the weather should continue unfavourable, the full carts that are in the barn can be unloaded, and the mow may be pulled, trodden down, and put to rights.—J. M.

before

before depositing it; they were filled completely; and I had the hay trodden down as much as possible. The sides of the mows were neither raked nor pulled, as I was of opinion that such a measure would be an unnecessary loss of room. When this hay came to be bound out, the whole was found to be perfectly free from dust, of good smell and colour*, and sold at as high a price as the best hay from the stack-yard. It was all made without receiving any rain, and that which was *least* prepared was put into the *barns*.

The Middlesex farmers are desirous of preserving the green colour of their hay as much as possible; though a *lightish* brown is of no dis-service to it. Hay of a *deep* brown colour, occasioned by its having heated too much in the stack, is said to weaken the horses that eat it, by promoting an excess of urine, and consequently it sells at a reduced price†.

The after-grass is lett by the farmers, at about 10s. an acre, to be fed off by heavy cattle, till such time as the land would receive injury by their poaching, were they continued in it; and after that, by sheep till Candlemas: or the latter alone at 3s. per score per week.

In the making of hay, some attention should be paid to the quality of the soil, and the kind of herbage growing on it. *The hard, benty, hay, of a poor soil, is in little or no danger of firing in the stack; and should, therefore, be put*

* Except only the smell of such of the hay as lay against weatherboarding, on the shady sides of the barn; but even this was confined to the surface. It was without dust, and no way injured in its colour.

† On this subject, the following valuable observation was made in the margin of one of the returned Reports:—"If you would make your hay come out of the stack of a fine colour, and the beauty of the flowers to appear, the hay you have shaken out of bastard cocks to prepare for carting, should be cocked in the heat, and remain till the next morning; then turn and open the cocks, for the air to take away the damp that is collected, which otherwise would heat in the stack, and of course the beauty of the colour would be done away."

very early together, in order to promote a considerable perspiration, as the only means of imparting a flavour to such hay, which will make it agreeable to horses and lean cattle : it will be nearly unfit for every other sort of stock.

It is the succulent herbage of rich land, or land highly manured, that is more likely to generate heat sufficient to burst into flame, as it has sometimes done ; of course, the grass from such land must have more time allowed in making it into hay. This the Middlesex farmers are perfectly aware of ; and, when the weather proves moderately drying, they make most excellent hay. But when very hot or scorching, they, as well as most other farmers under similar circumstances, are sometimes mistaken. In such weather the grass becomes crisp, rustles, and handles like hay, before the sap is sufficiently dissipated for it to be in a state fit to be put into large stacks. But if that be done when it is thus insufficiently made, it generally heats too much ; sometimes becomes mow-burnt, and, in some cases, though very rarely, has taken fire.*

The great quantity they have in hand at the same time, makes it extremely difficult to carry the whole just at the moment it is sufficiently made ; although it is certainly of considerable consequence that it should be so, in order to its yielding the greatest possible weight, and preserving its best quality ; as, every minute after that precise time, it continues to lose, both in weight and in its nutritious properties, by evaporation†. Even the difference of an hour, in a very hot drying day, is supposed to occasion a loss of 15 or 20 per cent. on the hay, by its being carried beyond the point of perfection ; and frequently even a greater loss is

* Hay stacked in a barn in the same state, would not heat too much ; and as to firing, no such thing was ever known.—*J. M.*

† Every thing we smell affords proof positive, that more than watry particles evaporate.—*J. M.*

sustained.

sustained. Hence the importance, to a hay-farmer, of having a machine calculated to put the hay together with great dispatch, and just at the right time. (See my description of a sweep, in the Appendix).

It is very truly remarked, that there are more hay-stacks fired in a fine dry summer than a wet one; and various are the methods* used in different places to prevent hay from taking fire in the stack, by drawing off the hot vapour or steam; but the misfortune is, that all of them are sure to produce mouldy and bad hay on every side of such openings or vents, and of course they are justly reprobated by every good hay-maker, and should only be resorted to in cases of necessity†.

The expences are, per acre, as under, viz.				£.	s.	d.
Mowing	3s.	beer	6d.	-	-	-
Making and stacking	-	-	-	-	0	3 6
Pulling the stack, and laying the hay pulled	-	-	-	-	0	9 6
out, upon the stack	-	-	-	-	0	0 6
Horses, harness and carts	-	-	-	-	0	2 0
Straw for thatch	3s.	thatcher and labourer	6d.	0	3	6

Total expence per acre in the stack-yard, is 19 or 20s.

If the hay be put into barns, the last charge of 3s. 6d. will not, of course, be incurred; most of the third, and part of the second, will also be saved; so that the whole expence in this case will not exceed 15s. per acre.

* Such as square troughs, bored full of holes; or two opposite boards, secured about nine inches apart by short laths nailed on them; or by drawing up the middle of the stack, a basket, filled with straw or hay. Some persons, on discovering that the stack heats too much, cut a square hole from the top to the bottom of it.—*J. M.*

† The bands for binding trusses are made of the most dusty, coarse and ordinary hay. A stack of forty loads will require two loads of binders; therefore two loads of dusty, &c. hay, in such a stack, is not any less to the farmer.—*J. M.*

Having thus stated the general practice of the hay-farmers of this county, together with my own observations and experience thereon; I shall now subjoin the several remarks, opinions, and observations, transmitted to the Board by various persons, through the medium of the first Reports circulated for the purpose of obtaining information on this, as well as many other branches of the rural art.

In the margin of one of these Reports, a gentleman expresses himself thus: "It is certain, there cannot be a more desirable object in the whole line of agriculture, than to discover a method of making hay to advantage in *wet weather*; and it seems not a little strange, that among all the improvements carrying on in this improving age, no attention has been paid to this necessary business till within these two years, when the Society for the Encouragement of Arts, &c. offered a premium for such a discovery. It is not to be expected, that under the present system of hay-making, any thing advantageous can be done; but let the ingenious turn their thoughts to the object, and it is to be hoped that some means may be found out, by which this desirable end may be obtained. And we may be the more sanguine in our expectations, when it is considered how many things, formerly judged impossible, have of late been found practicable. To instance one among many others, the spinning above two hundred threads by one person is now common, which, within our memory, was treated as a chimera, and declared totally impracticable."

A second gentleman makes the following just remark: "The art of hay-making in Middlesex is well known to be the most advantageous that can be contrived, in so variable a climate; and the best not only in Britain, but

“ but in Europe. The skill of the Middlesex farmer in
 “ this article, deserves to be disseminated.”

Mr. Baird, in the first Report of this county, says,
 “ In a very fine dry summer, such as that of 1793, it is
 “ a common and just remark, that more hay is spoiled by
 “ heating, in consequence of the farmer being in too
 “ great haste to get it stacked, or put into a rick, than in
 “ wet seasons. The reason of which is, that although
 “ the grass appears to be dead and dry, yet it often hap-
 “ pens, that the sap of it is not sufficiently evaporated
 “ before it is stacked. This it is which causes it to heat
 “ so as frequently to take fire.”

Upon the foregoing opinion Dr. Walker has written
 the following observation, viz. “ On the subject of hay-
 “ making, the author advances here a very fallacious and
 “ hazardous doctrine, founded on a vague remark, which
 “ is contradicted by general experience concerning the
 “ state of hay in dry and wet summers. It is the moisture
 “ received from the atmosphere, and not the sap of the
 “ grass, that is the general cause of the heating of hay.
 “ If the grass is dead, which it soon is in dry weather,
 “ and has not been wetted by rain, it may be early stacked
 “ with safety. But though it were never so dead and dis-
 “ coloured, if it has been drenched with rain, and stacked
 “ without being skin dry, it will most certainly heat.”

Mr. Baird also, in the above-mentioned Report, writes
 as follows: “ Others recommend hay-barns, covered in
 “ with tiles; and chimneys, with holes in the shafts, to
 “ let out the foul air, and a communication below,
 “ between the shafts and the open air, made with brick
 “ in the manner of a drain. By improving the quality of
 “ the hay, and saving it from accidents, any expence
 “ attending their construction will, it is said, be amply
 “ repaid in the space of two or three years, and conse-

“quently the first cost is the only object of consideration.”

Dr. Walker combats these observations of Mr. Baird in the following words: “That hay-barns can compensate their expence, in two or three years, by the quality of the hay; or that they ever can compensate their expence at all; are delusions against which both farmers and proprietors ought to be on their guard.”

On this last observation of the worthy Doctor I must beg leave to remark, that it is, I believe, in direct opposition to the opinions of the best hay-farmers in the county, and contrary to my own experience. *For, in the driest seasons, barns are a saving of four or five shillings an acre; and, in wet seasons, the ready assistance which they afford, in speedily securing the hay, has been known to make a difference in price of twenty shillings per load on a small number of loads.* Besides, are not the Doctor’s two remarks at variance with each other? In the former he says, “it is the moisture received from the atmosphere, and not the sap of the grass, that is the general cause of the heating of hay.”—If this be true, then *barns* must be useful and proper, since *they* are the only means yet devised, for preserving the hay from atmospherical moisture; in addition to which, *they exclude the current of external air, which is the immediate cause of the ignition of the hot vapour at the instant of its escape from the hay-stack.* In the *barn*, this hot vapour, or steam, is confined in the empty space between the hay-mow and the roof, until it has parted with so much heat, as to be incapable of taking fire when it comes in contact with the external air, in its escape from the barn.

It is further absolutely determined by general experience, that *hay* which has not been exposed to rain at all, is much more liable to fire in the stack than that which
has

has been *drenched* with it. Indeed the latter seldom heats so much as the farmers wish it to do, since a moderate degree of heat would improve its flavour; *but that is prevented by its becoming too much made during every process yet known for drying it.* On the contrary, *all such hay as is put into the stack without being skin dry, universally becomes coated with a stinking mould; or, as the Middlesex farmers call it, dust.*

The following observations respecting the custom of mowing meadow-land twice, or oftener, were transmitted to the Board without a name.

“ No good farmer thinks of mowing his meadow-lands
“ more than once a year, unless he has, or can easily pro-
“ cure, dung sufficient to cover the ground immediately
“ after the second mowing.”

The farmers used to mow the whole of their ground as often as possible, but experience has taught them, that a better method is, to *mow only once a year, and feed all the after-grass, with the intention of increasing the principal crop of the following year.*

Another gentleman has written the succeeding account in the margin of one of the first Reports, viz.

“ A valuable experiment was made in South-mims
“ parish a few years back, on some meadow-lands that
“ had, for many years, been poached or trod by heavy
“ cattle. The land being naturally a cold clay soil, it
“ produced a sharp, coarse, complicated grass: in the
“ month of March the land was cross-harrowed, by which
“ means this complicated grass was turned up, and, when
“ the roots were sufficiently perished, it was again har-
“ rowed, and sown with Dutch clover: a small dressing
“ of old dung, consisting of yard and stable dung mixed
“ with road scrapings collected in hollows, was laid on,
“ and harrowed well with a strong bush harrow. The
“ first

“ first crop produced two loads and an half per acre ; the
“ second crop one load per acre, of an excellent quality.
“ This experiment was proved by Mr. Raine, on a farm
“ belonging to George Byng, Esq. It is obvious, that
“ this black complicated grass will always breed on cold
“ clay land that is fed late, and trod by heavy cattle.”

The following remarks are also copied from marginal notes written in the Reports returned to the Board.

“ Neither the Middlesex nor the Kentish farmer, has
“ favoured you with any attempt at making hay in seasons
“ unfavourable to that business. The mode I have always
“ pursued, is, the first fine day that comes, to break out
“ what grass is cut, turn it, windrow it, and get it into
“ small cocks : the next fine day, as soon as the ground is
“ dry, I break a few of the cocks out at a time, and keep
“ them continually moving till I get them quite dry ; then
“ I put three or four of them into one cock. I proceed
“ in this manner till I have got them all broke out, and
“ served as above ; and should the weather still continue
“ unfavourable for hay-making, I never venture to break
“ those cocks out again, but I take every opportunity of
“ lightening them up with forks, to let the wind and air
“ draw through them. I pursued the above plan in the
“ wet summer 1781, and by that means made more good
“ hay that year than any person in the neighbourhood
“ where I then lived.”

“ I am thoroughly convinced that grass cut full of sap,
“ is not likely to receive much damage from small showers
“ of rain, till it is nearly made into hay ; and, on the
“ other hand, grass cut when the bents are quite ripe, is
“ liable to be damaged by every trifling shower that falls.
“ When the grass is thin, or stands to be quite ripe, I
“ have known it only just broke out, raked together,
“ cocked, and the next day put into a rick, without its
“ being

“ being over-heated, or any way injured by such hasty
 “ proceedings: were they to give such hay much making,
 “ it would never settle in the rick.”

The following observations on the Middlesex method of hay-making, are taken from a letter written by Thomas Skip Dyot Bucknall, Esq.

“ By this regular method of tedding grass for hay, the
 “ hay will be of a more valuable quality, heats more
 “ equally in the stack, consequently not so liable to da-
 “ mage, or fire: will be of greater quantity, when cut into
 “ trusses, and sell at a better price; for when the grass
 “ is suffered to lay a day or two before it is tedded out of
 “ the swath, the upper surface is so dried by the sun and
 “ winds, and the interior part is not dried, but withered,
 “ so that the herbs lose much, both as to quality and
 “ quantity, which are very material circumstances, at the
 “ price hay now fetches at market. An instance in point:
 “ the physic gardeners who attend to their business, are
 “ very careful, in the proper and equally drying their
 “ herbs, and they find their account in it.”

SECT. IV.—FEEDING.

I do not know of any land in this county being applied to the fattening of cattle for the butcher. Indeed the produce can always be sold for ready money, at such high prices, as to render any system of grazing a losing business. A bullock would eat as much hay, turnips, oil-cake, &c. in a week, as could be sold for twelve shillings; and he would probably increase in value in that time about six. Of course the farmer would lose six shillings a week per head by feeding bullocks; and sheep would occasion a proportionate loss.

I am

I am fully persuaded that all the straw and haulm in the kingdom, over and above what is indispensibly necessary for thatching buildings and littering cattle, might be easily converted into wholesome food, and made to contribute materially towards the rearing and support of lean stock, by the simple operation of cutting it into chaff; and, in some cases, by the commixture of roots and other articles, in order to render it more palatable, and to induce the cattle to eat an increased quantity. When so prepared, it should be given to them in mangers of rather a large size, and calculated to prevent waste. There can be no doubt but this method of preparing and consuming straw, haulm, &c. would tend considerably to increase the number of black cattle; and, when compared with the present practice of treading and rotting it into manure of a poor quality, must be considered of great national importance. Thus the straw, &c. is not only rendered fit for the support of live stock; but, by being digested, and passed through their bodies, it must become a much more highly enriched manure than in the ordinary way of treading and rotting.

The astonishing increase that would probably take place in the number of stock, in consequence of this mode of feeding, would effectually reduce the price of lean neat cattle, and consequently the price of butcher's meat in general.

Cut straw is also found to be extremely useful for bullocks while fattening for the butcher on roots, oil-cake, distiller's wash, or indeed any soft food which does not admit of chewing the cud; as this defect may be as well corrected by the use of chopped straw, in the way just mentioned, as by that of any other and more expensive diet.

Varying the food of stock, while fattening, as much as possible, is allowed to promote quick feeding in a very great degree. This variety may easily be furnished by a
judicious

judicious mixture of the several articles adapted to that purpose, and the quality at the same time may be considerably improved.

Some kinds of food, that are loathed by cattle while in an *unmixed* state, are rendered both palatable and nutritious, by being *incorporated* with other articles. Even oil has been found greatly nutritive, merely by having been mixed with bran, and given to cattle. It is supposed that lint-seed is more fattening than any other, which is probably owing to its containing a larger portion of oil. Melasses has also been given with boiled Indian corn, and found to fatten oxen very quickly*.

During the present war, an astonishing quantity of hay was exported from this county to the armies in Germany, after having been previously compressed into about one third of its natural compass, by means of the double screw presses in common use among the packers. This method renders even the most bulky articles infinitely more convenient and portable, and consequently better calculated for conveyance from one place to another, either when on ship-board or in camp; as it is evident they may be removed with much greater ease and alacrity when so compressed than could otherwise be the case.

Hay, straw, or indeed any article capable of sustaining the necessary pressure, might, after being thus reduced in point of bulk, be much more readily conveyed, either by land or water carriage, with less than half the number of carriages, horses, and boats, now in general use for that purpose.

* See a letter from L. Millington, Esq. in the Appendix.

CHAPTER IX.

GARDENS AND ORCHARDS.

SECT. I.—FRUIT-GARDENS.

FROM Kensington, through Hammersmith, Chiswick, Brentford, Isleworth, and Twickenham, the land on both sides of the road, for seven miles in length, or a distance of ten miles from market, may be denominated the great fruit-garden, north of the Thames, for the supply of London*. In this manner much, some say most, of the ground in these parishes is cultivated. The pleasure-grounds and villas of some of the nobility, and wealthy commoners, comprize most of the remainder of this district.

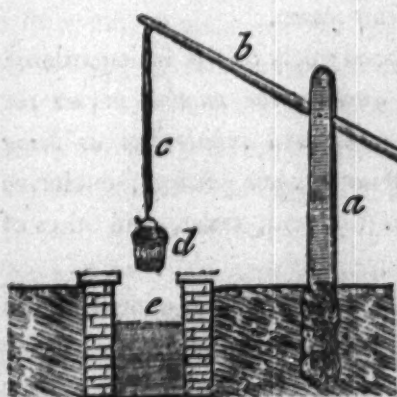
The *fruit-gardeners* have, what they call, an *upper* and *under* crop growing on the same ground *at one time*. First, the ground is stocked with apples, pears, cherries, plums, walnuts, &c. like a complete orchard, which they call the *upper* crop. It is, secondly, fully planted with raspberries, gooseberries, currants, strawberries, and all such fruit, shrubs and herbs, as are known to sustain the shade and drip from the trees above them with the least injury. This they term the *under* crop. Some of these gardens have walls which are completely clothed with wall-fruits; such as nectarines, peaches, apricots, plums, and various others, all properly adapted to the aspect

* There are also considerable fruit-gardens on the Surrey, or south side of the Thames.—J. M.

of the wall. In order to increase the quantity of shelter and warmth in autumn, they raise earthen banks of about three feet high, laid to a slope of about 45° to the sun. On these slopes they plant endive in the month of September; and near the bottom of them, from October till Christmas, they drill a row of peas. By this means the endive is preserved from rotting; and, as well as the peas, comes to maturity nearly as early as if they had been planted in borders under a wall.

Soil.—The soil is an excellent dry loam, and is annually dug, and repeatedly hoed, so as to keep it free from weeds.

Water.—The springs of this district lie at eight or ten feet in depth; and the manner of raising the water is peculiar to gardeners. For cheapness of machinery, and dispatch, it exceeds the pump or the roller. It consists of a principal post set firmly in the ground a small distance from the well,



about eight feet out of the ground, as at *a*.

In the top of this post *f* a baulk, or ufer, *b*, turns on an iron pin.

To the smaller end of this baulk is hung a pole, *c*, and to this is suspended the pail, *d*, which, when empty,

swings over the well, *e*. In order to raise the water by this apparatus, a person takes hold of the pole, and pulls it down until the bucket descends into the water and is filled, when a small force at *c* lifts it up again, as it is assisted by the weight at *f*.

I suppose

I suppose there are upwards of three thousand acres of land under this most excellent and valuable management. The quantity of productive labour depending on these gardens is surprizing. The digging, hoeing, trenching, harrowing, planting, grafting, pruning, budding, gathering, and marketing the fruit; and also carrying it from market to the dealers in every part of the town; and in crying it for sale daily through six or seven thousand streets in London; must supply a wonderful quantity of labour and profit to numerous individuals.

They probably give employment and support, in the garden, to *five persons* (a man, his wife, and three children) *per acre, during the winter half year*; and in summer, about five persons more (chiefly Welsh women) are added to the number; while the market-people, porters, basket-women, dealers, and hawkers, may be estimated at five more. The last ten are all men and women whose families equal their own number, or may be twenty. Thus the whole probably amount to *about thirty-five inhabitants per acre during the fruit season*.

Many of them do not depend solely on the fruit-gardens; but, *if I may be allowed to average the number at ten per acre, they would give thirty thousand inhabitants as being entirely supported by the labour of these gardens*; exclusive of the persons depending on the rent, taxes, and tithes of this land.

Estimating their produce in money, it cannot be less than 100*l. per acre*, or 300,000*l. per annum*.

The fruit-gardens of Surrey are of considerable extent, and cultivated in the same manner as those in Middlesex. And as much is also brought from Kent, Essex, Berks, and other counties, for the supply of the London markets, to the amount of at least one-third of the produce of this county, *the consumption of the metropolis and its environs, must be 400,000*l. per annum**.

Fruit-

Fruit-trees are of many species, and their varieties are so numerous as entirely to preclude the idea of describing them severally in a work of this kind: indeed they are highly deserving of being made the subject of a distinct publication; and I shall take this opportunity to say, that the public will, probably, be gratified with such a treatise within a reasonable time, "as there is a general catalogue of fruit-trees now compiling; in which the fruits are painted from nature, and the character of each, when ripe, particularly described, together with their several qualities, in the most correct manner. This work has already (1794) occupied three years of incessant labour; and nearly as much more, of both time and labour, will be necessary to render it fit for the public perusal."

—*P. Foot.*

James Gessop, gardener to John James, Esq. of Hammersmith, in the year 1778 made a quantity of exceeding good wine from English grapes, which induced him to attend very particularly to the cultivation of the vine. When it first came under his care it was aged; but had been injured more by neglect and injudicious management, than by years. He cut almost half the stems off, and laid down half the remainder; and the abundant crop of improved fruit which succeeded, gratefully repaid his care. Three-fourths of it then consisted of new wood. In the year 1779 he cut down the remainder of the old wood, and trained the finest wires he could select, perpendicularly about eighteen inches asunder, in three and six-foot lengths alternately. In the year 1780, he again cut off all the oldest wood, and trained the young wires as before; but in this instance, in lengths of six or seven feet. Of the full crop of excellent grapes which this culture produced, he made wine in the proportion of one hundred gallons to one hundred yards of wall*.

* *Foot's Middlesex.*—The kind of grape is not mentioned.—*J. M.*

The inhabitants of Britain, with few exceptions, neither understand the culture of the grape, nor the manufacture of its juice; for it certainly is very possible to make as palatable, and much more wholesome, wine in England, than what is generally imported. It is well known that wine might be made of the English sweet-water grape, superior to mountain. And it is almost equally well known, that much of the colour, and all, or nearly so, of the sediment, or tartar, and part of the flavour of red wine, are obtained by the infamous addition of unwholesome drugs, which have destroyed some persons in a few hours; others in a few days, and reduced the duration of life in thousands to half the number of years which they might otherwise have attained. This practice has determined, or will determine, every man who has any regard for his health, to refrain from drinking such wine, until it has been kept a sufficient number of years to procure the deposit and concretion of the poisonous ingredients that have been obtruded into it.

The orchards and fruit-gardens of these kingdoms are a considerable branch of its agriculture; and it is expected, the standard fruit-trees will, in a few years, be much improved from the exertions of T. S. D. Bucknall, Esq. who has been very assiduous in establishing the science of orcharding upon more rational principles than had before been done in this kingdom.

Several of Mr. Bucknall's papers on this subject were published in the 11th 12th 13th and 14th volumes of the Transactions of the Society for the Encouragement of Arts, &c. containing the practice which he introduced at Sittingbourne, in the county of Kent, in the year 1790; which papers have lately been reprinted in a pamphlet published by G. Nicol, bookseller to His Majesty and the Board of Agriculture, in Pall-mall.

In

In this book, are observations on the suitable manures. All that should be done in order to render most trees healthy, large, handsome and productive, is fully pointed out. Many useful hints are given to guard the planters and fruit-growers against the usual effects of neglect and mistake; and much stress is laid upon the proper soil, position, and judicious shelter. The operative part is expressed in so clear a manner, that it can hardly be misunderstood; nor can I sufficiently recommend the pamphlet, which should be read by every fruit-grower.

SECT. II.—KITCHEN-GARDENS.

THE *Kitchen-Gardener*, conscious that he cannot raise his goods to the higher state of perfection without the most liberal use of dung, is not sparing in the expence of procuring a sufficient quantity; nor is he saving in the labour of managing his dunghill, when it is procured.

This dunghill consists of new horse-dung and litter, brought from the stables, and shot immediately from the carts in which it is brought, into an oblong heap. To this is daily added, what is brought home in the carts on their return from town, until twelve, fourteen, or sixteen days* before it is wanted; at which time, so much of it as the gardener thinks necessary for his immediate purpose, is shook to pieces into a separate heap, turning all the long litter into the middle; and the short litter and shovelings to the outside. This being done, it is left in the lightest manner, to permit the hot, putrid, offensive vapour freely to escape; which it does

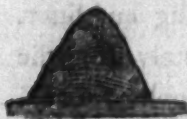
* Whether it should be twelve, fourteen, or sixteen days, depends on the judgment of the gardener. If it be long, sound litter, it will require sixteen days; if short, and partly rotten, it need only be twelve days; and if in a medium state between the two, it should lie fourteen days.—*J. M.*

very copiously in a few days. It will then be fit to be turned, and shaken up, as before, in about eight days; and when so done, it is left for four, six, or eight days more, according to the state of the manure, as aforesaid.

To fit it for use in the winter season, no water is necessary; but in drying weather, during summer, when the heap would be more likely to turn of a dusty mould than to putrify, they add water from a garden pot, just enough to secure putrefaction, and to give time for the air, which it discharges during that process, to escape, which would otherwise fill their frames with an insufferable stench, more than could be absorbed by the plants, which would either injure or destroy them.

The dung thus reduced and prepared, is fit for the formation of hot-beds.

When intended for the purpose of raising mushrooms, a large surface becomes an object, and the bed is therefore made twenty, forty, or more yards in length. A transverse section of this bed would be of a triangular form, thus:



When it is intended that the bed should be covered with glazed frames, it is prepared in the form of a parallelogram; and in this last shape it is usually made for the raising of most kinds of seeds.

Small salad is raised under these glazed frames; *and a fresh crop is sown, cut, and marketed every fortnight.* The crop being divided into a regular succession, produces a daily supply.

The moderate heat arising from the constant putrefaction of the dung under these frames, during every fortnight or three weeks, forces a succession of seeds into plants, of about six inches high, fit to be transplanted: which heat, when necessary, is increased by lining the frames (*i. e.* laying stable litter to the back and front edges

edges of the hot-beds), and so continued until the end of the season. When the dung has done working, the frames being removed, it is dug up, and barrowed to a dung-hill, where fresh horse-dung is mixed with it, and, after being all rotted together, it is trenched into the quarters. *Thus, in one season, it contributes to raising the seedling plants; and in the next, to force other plants into maturity.*

When the quantity of dung returned from the hot-beds exceeds the demands of the ground, they sell it to common farmers: in this case, giving preference to dung that has not been worked, for their own use. The farmer ought also to estimate the difference.

OBSERVATIONS ON THE GARDENS AT THE NEAT-HOUSES, LYING BETWEEN WESTMINSTER AND CHELSEA.

This soil, no doubt, originally consisted of the sediment deposited there from the richly impregnated water of the Thames; and, like the other marsh land on both sides of that river, is secured against inundation with *an earthen bank*, or, as it is elsewhere called, a *sea wall*. The time, or period, when these walls were constructed, is one of those events of which history is silent. I have heard it said, *that much of the base and center of them consists of chalk, which substance was probably made use of for the purpose of keeping out moles, rats and worms.*

Most of the land thus secured against floods, is of the richest quality, and peculiarly suited to the purposes of a kitchen-gardener. In the situation now under review, the occupiers can, by a little attention to the sluices, fill their ditches, dip-holes, and wells, with Thames water, and detain it in such places to within about eighteen inches of

the surface, and by that means save a great deal of labour in watering their crops. In addition to this, the water they use (from the Thames) is also of a more enriching quality than can be met with in most other places.

This land has been as long, or perhaps longer, in the occupation of kitchen-gardeners, than any other land in Britain, and for a great length of time has been supplied with dung, as much in quantity, and as often repeated, as, in the opinion of the occupiers, could be applied with advantage to the crops. The quantity thus used is annually upwards of sixty cart-loads per acre *.

Thus, by an union of *natural fertility with heat* (raised by *dung*), and a due degree of *moisture*, are the occupiers of these grounds enabled to raise the *greatest* crops in the *least* possible time. This district being also nearer the market than most others, it has, from a combination of such advantages, a decided preference over every district in the kingdom †.

Crops.—Soon after Christmas, when the weather is open, they begin by sowing the borders, and then the quarters, with radishes, spinage, onions, and all the other *seed* crops. As soon afterwards as the season will permit, which is generally in February, the same ground is planted with cauliflowers, from the frames, as thick as if no other crop then had possession of the ground. The radishes, &c.

* The gardener to whom I am indebted for most of this account, fetches six hundred loads of dung annually from town, and uses it all on nine acres of ground. These carts are drawn by two horses, and the loads are about half the size which the farmers draw to greater distances with three or four horses.—*J. M.*

† It is also situate on the south-west border of the town, consequently the cold of the north-east wind, so hurtful to vegetation in exposed situations, is considerably moderated, or rarefied, before it passes over these grounds; they are also naturally low and sheltered.—*J. M.*

are soon sent to market; and when the cauliflowers are so far advanced as to be earthed up, sugar loaf-cabbages are planted from the aforesaid *seed* crops. When these are marketed, the stalks are taken up, the ground cleared, and planted with endive and celery from the said *seed* crop; and daily as these crops are sent to maket, the same ground is cropped with celery for winter use.

The foregoing rotation, or order, in which the land is cropped, may be considered as the general practice of the gardeners of this district, although there are individuals who differ from it in several respects; as the state of the markets, the price of the articles, or their own inclination and opinion directs them. But one thing they unanimously agree in, namely, that to *dung plentifully*, and with discretion; *to dig the soil well*, and *to sow good seed*; is the only practice on which a reasonable expectation of good and plentiful crops can be founded.

Next to the grand object of good land, clean, full of dung, and but little above the water, the kitchen-gardener esteems shelter from cold winds as highly essential towards bringing his crops rapidly forward, and into the highest state of perfection. Hence it has been the constant practice, in order to attain this desirable object, to erect a considerable number of reed fences (though they have lately substituted paled fences in their stead), which they place in such positions as are best calculated to prevent the currents of cold chilling winds from passing over their grounds.

The following estimate was made by a gardener who occupied nine acres, situate about two miles farther from market, as his opinion of the produce of the soil at the Neat-houses before mentioned, viz.

The radishes, &c.	- - - - -	£.10
Cauliflowers, frequently 70 or more, but say	-	60
Cabbages	- - - - -	30
Celery, the <i>first</i> crop, not unfrequently upwards	} 50	
of sixty, but say		
Endive	- - - - -	30
Celery, the <i>second</i> crop	- - - - -	40
Total annual produce of one acre		£.220

This he stated as an estimate rather under the mark. Some seasons occasion a considerable loss, perhaps of one crop; but as this does not often occur, he was of opinion that, upon the whole, *two hundred pounds an acre was a very low estimate of the average annual produce of these gardens.*

With the produce or amount of a gardener's crops, I confess I am not *practically* acquainted; and, therefore, I must beg that the foregoing account may be taken as the result of the enquiries which I have been able to make.

The very great expences, in labour, manure, &c. which kitchen-gardeners are at, is evident to every one who lives in the neighbourhood of them. Probably their expences may be thus divided, viz. in labour, 35l.; teams and dung, 25l.; rent, taxes and tithes, 12l.; marketing and expences, 8l.—together, 80l. which, taken from the foregoing sum of 200l. leaves 120l. per acre as interest of capital, and profit.

The farming gardeners, or those who work their soil principally with the plough, are situated rather more distant from London; occupy larger tracts of land; and are content to follow something like the following method or order of cropping, namely:—in the months of January and February they crop their land with *early peas*, to be gathered green in pods and sold in the month of June. The haulm is hooked up, and, as soon as it is dry, is carried

carried off the ground, and stacked, for the fodder of horses, on which they thrive nearly as well as on hay. The ground being cleared, is ploughed, and sown with *turnips**, which are sold off in autumn; at which time the ground is again ploughed, and planted with *collards*.

When the crop of peas is of the marrowfat kind, they do not come so early as before mentioned, and are, therefore, generally succeeded by a crop of savoys, or late cabbages.

In gathering green peas, six or seven acres will employ twenty persons, daily (Sundays not excepted), and they are paid from one shilling to sixteen or eighteen-pence per sack, of four bushels, for gathering them. The price varies according to the bulk of the crop, and also according to the kind of pea, or size of the pods. Those of the marrowfat, or larger kind, at one shilling, and the smaller sort at sixteen or eighteen-pence per sack. They are sent to market in these sacks, by both land and water carriage, from every distance, perhaps, not exceeding twenty-five miles, and are sold in the market at, from five to seventeen shillings per sack: in which manner this crop returns from less than five, to upwards of 20l. per acre †.

* All these operations are done in a few days, or finished within a week from the time when the last peas of the piece of land are gathered.—*J. M.*

† The produce of a field of six acres, in June, 1796, that was not at all remarkable for more than a common crop:

Number, 40 sacks, of four bushels each, of pods sent to market,	£. s. d.
and sold from 6s. to 13s., average 7s. 6d. each	15 0 0
Haulm, stacked and given to draught horses, one ton per acre,	3 0 0
worth two-thirds as much as hay, but say only	
Produce	£. 18 0 0
EXPENCES—Ploughing once from clover ley	0 10 0
Seed, four bushels, at 12s.	2 8 0
Drilling, covering, &c.	0 7 0
Hoeing twice	0 10 0
Podding at 18d. per sack, on 40,	3 0 0
Marketing, distance ten miles, land carriage	1 5 0
	8 0 0
Remains	£. 10 0 0

Turnips

Turnips are pulled up by the hand, the tap-root cut off, washed, and tied in bunches, of ten or twelve in each. They are then sent to market in carts, which carry about forty dozen of these bunches, and thus produce from two to four guineas each load, or from twenty to upwards of fifty pounds per acre.

I think there are about eight thousand acres in four counties* cultivated in this manner, producing, per acre, about fifty pounds. There are perhaps thirteen hundred acres in the vicinity of London, cultivated by the spade in the most perfect manner, which do not possess the advantages which I have before stated to belong to the soil at the Neat-houses, but which are rather under the medium between the soil at the Neat-houses and the land occupied by the farming gardeners, producing an hundred pounds per acre.

There are also about five hundred acres more, which, possessing some of the advantages of the soil at the Neat-houses, hold a medium station between that and the last-mentioned thirteen hundred acres, and which, being cultivated in the same manner, produce a return of about one hundred and fifty pounds an acre. This sum is disposed of thus, viz. in labour, 40l.; in teams and dung, 25l.; marketing and expences, 5l.; rent, taxes and tithes, 10l.—together, 80l., leaving for interest of capital, and profit, 70l. per acre.

* Middlesex	- - - -	1800
Surrey	- - - -	3500
Kent	- - - -	1700
Essex	- - - -	1000
		8000 acres.

RECAPITULATION.

Gardens at the Neat-houses	200 acres, at 200l. per acre	-	£.40,000
Surrey side of the Thames	500 acres, at 150l.	-	75,000
Round the out-skirts of London, in 4 counties	1300 acres, at 100l.	-	130,000
Wholly cultivated by the spade	2000 acres, at 120l. 10s. per acre, average	}	£.245,000
Farming gardeners; their land partly cultivated by the spade, but mostly by the plough	8000 acres, at 50l. per acre	-	400,000
Total	10,000 acres, producing annually		£.645,000
To which sum add for fruit-gardens		-	400,000
			£.1,045,000

And the total will shew, that *the consumption of the metropolis and its environs, in fruits and vegetables, is upwards of one million pounds sterling per annum.*

I think these several estimates cannot be too high for the produce raised by the labour of the kitchen-gardeners round London; as they are known to live, and provide as well for their families, on five acres of the best ground, nine acres of the second best, or twenty acres of an inferior soil, as the generality of farmers can on one hundred and fifty or two hundred acres. This cannot fail of placing *the gardener's art* in the most favourable point of view; as *no other application of land, nor of labour, does, or can supply, so large a surplus-revenue towards supporting the non-productive part of the community.* The labour and profit of the dealers, the portorage and additional carriage, greatly increase this sum to the consumers; but in what ratio or proportion, I have not been able to learn; though, in the article of *turnips*, I have known the farming gardener to receive *forty-five pounds per acre* for that commodity, when the consumer was paying to the retailer after the rate of *one hundred and fifty pounds per acre*.^{*} In other

* Four hundred and eighty (40 dozen) bunches at 1½d. is 3 l. a cart-load: fifteen such loads per acre is 45 l. They were retailed at 5d. which is at the rate of 150l. per acre.—J. M.

articles, no doubt something like the same proportion holds good. Upon mentioning this to a gardener, he replied, "No, no; not so much as that, neither." The same person observed, that the retailers who keep shops and stands, never buy more than they know they can sell *well*. And therefore both growers and consumers are much indebted, for the moderate price, and the consequent increased consumption, to the jack-ass drivers, barrow-women, and other itinerant dealers in these articles, who buy of the gardeners in the market, and hawk through the streets of London, and its environs, vegetables and fruit at a very moderate price.

That gardening is not altogether an unprofitable concern (as Dr. Adam Smith has represented it to be), we have ample proof, both in Middlesex and Surrey. There are generally some gardeners in the commission of the peace. It has produced several sheriffs of counties; and more who have realized from 20 to upwards of 50,000*l.* in addition to their patrimony*.

* Mr. Ruberry, of Little Sutton, in this county, is said to have at this time upwards of eighty acres cropped with asparagus, which is supposed to cost 10*l.* an acre in making. The labour is afterwards contracted for at 5*s.* per acre per annum, except cutting and marketing. It is very profitable on sandy land; in kindly growing seasons, cutting twice in twenty-four hours. Some persons say it will produce to the cultivator upwards of 50*l.* per acre per annum, with less expence than attends most other crops.

Mr. Adams, of East Sheen, Surrey, has sixty acres freehold land cropped with asparagus, all of his own planting, by which he has acquired a large fortune.

Mr. Edmonds, of New-cross, Deptford, amassed a large property, as a general kitchen-gardener, which profession he followed to a great extent; and which business is now carried on by the same family, in the same extensive manner.—*J. M.*

SECT. III.—NURSERY-GROUNDS.

At Chelsea, Brompton, Kensington, Hackney, Dalston, Bow, and Mile-end, much ground is occupied by nurserymen, who spare no expence in collecting the choicest sort, and the greatest variety, of fruit-trees, and ornamental shrubs and flowers, from every quarter of the globe; and which they cultivate in a high degree of perfection; the latter, to a very great extent, and to almost an endless variety, so that to attempt a particular description of them here, would not only be a work of much time, but would also be foreign to the nature of this undertaking.

Many of them are annually exported to Ireland, Spain, Portugal, Italy, Russia, and, until lately, to France; but there are still greater quantities sold for use in this country.

“ Mr. Lee, of Hammersmith, has made great progress
“ in the propagation of forest-tree plants, as well as of
“ ornamental shrubs. Mr. Wheatley, likewise, of Brompton, raises quantities of hardy trees. But although the
“ inclination for the culture of these trees seems to be increasing, it has yet, from want of proper encouragement, made very little progress. The quantities raised
“ in the county of Middlesex is very small; but, from
“ the best information I could procure, elm, beech, larch, planes, pines of all sorts, birch, ash, chesnut, walnut, acatia, and laburnam, might, with proper encouragement, be beneficially cultivated in this county
“ to a considerable extent.”—*P. Foot.*

Soil.—The most general opinion of the trade seems to be, that the best soil for a nursery, is that which would be the most desirable for the general purposes of agriculture, namely, a good loam fresh broken up from old pasture;

ture ; which may be true, as to the nurseries producing abundance of thriving plants ; but otherwise, as to the success of the timber trees to be raised from such plants, Mr. Baird very justly observes, “ that it does not appear “ to be a safe or eligible plan, to trust to the forest timber “ plants raised in grounds so near London, especially “ when they are to be planted out upon a poor soil, and “ more exposed situations, as it is obvious that plants “ raised in a mild climate, as it were in hot-beds, and too “ hastily brought forward by the force of manure, will “ make but a slow and sickly progress when transplanted “ to a less rich soil, and more unkindly climate*.

“ It is therefore humbly suggested to gentlemen who “ have it in contemplation to become considerable planters, “ to turn their attention to raising their own plants and “ trees. By adopting this plan, they will find not only “ a very great saving in point of expence, but prodigious “ satisfaction afterwards, in the health, and future success- “ ful progress, of their plantations.”

In my opinion, no one soil can be the most suitable for plants of every genus ; one delights in a dry soil, another in a moist one, and some even in water ; nay, two plants, which require a soil equally dry, may be so opposite in their feeding powers, as that one shall flourish in a situation where the other would inevitably perish. As for example, a dry black peat earth *naturally* produces heath,

* Upon this opinion I met with the following observation in one of the returned Reports, viz.—“ The author adopts here the common, but ill- “ founded, opinion, concerning the soil of nursery-grounds: an opinion “ which must appear very plausible, and prove captivating, to the unin- “ formed, for the reason he gives. But the young tree of the best growth, “ and with the most roots, which can only be obtained in the richest soil, “ will always thrive best in whatever soil it is planted. As, on the other “ hand, a tree stunted in the poor soil of a nursery will never make a free “ growing and vigorous plant in any situation.”

and is an enemy to white clover; but upon applying lime in a proper quantity on this land, the heath would perish, and white clover would then succeed.

The beech and the willow are never found in a state of nature in the same place; nor are the elm and the pine in such a situation the neighbours of each other. An attentive observation of the natural products of different soils, would convince *even a St. Thomas*, that no one soil, and perhaps not one nursery, can be most fit for raising every tree of the forest kind. No person, competent to make the observation, can ride over a large estate, without observing that the trees vary according to the nature of the soil.

Every marsh of a certain degree of wetness, presents to us the willow and the alder; where the soil is rather more dry, the elm and the ash are the natural growth of it; as the soil becomes still further removed from the marsh, the oak is found to succeed; a little further on, if the soil is dry and calcarious, the beech is found; should a poor free-stone gravel or sand succeed to this, there will be seen the fir.

I have observed all these changes in the distance of a mile; and that planter will certainly stand the fairest chance of success, who follows this order of nature; or at least, who avoids planting in direct opposition to it.

Every wood-cutter knows, that oaks which have been raised into timber under a certain degree of shelter, would cease to thrive, if deprived of that shelter.

Experience plainly shews, that trees and plants are as susceptible of injury, from every sudden and extreme change in their habits, as is the human frame itself. Hence the importance of well considering the nature of the climate. Its degree of shelter and warmth should not, in the nursery, exceed what the tree will meet with after being transplanted;

planted; but, on the contrary, if the nursery should be in the more exposed situation of the two, the trees will be the more likely to succeed in the plantation.

When a gentleman has determined to raise a plantation, his business is to look out for *nursery-grounds whose climates are rather worse; and soils rather better, than his own*; and in such grounds to select the most healthy and thriving plants. If no such nurseries are to be found, the only remedy will be, to appropriate a part of his own ground, circumstanced as aforesaid, for the purpose of raising a sufficient number of plants for the proposed plantation.

The methods of raising timber plants, fruit-trees, and ornamental shrubs, are many and various; such as sowing, laying, cutting, grafting, budding, &c. but for a particular description of these several operations, ample information may be obtained by reference to those authors who have written expressly on such subjects.

It is supposed there are about 1500 acres of nursery-ground in this county; and that, including the hot-houses and green-houses belonging to them, they produce nearly 70l. each, or 100,000l. a year.

CHAPTER X.

COPSES, WOODS, PLANTATIONS,
HEDGE-ROWS, AND OZIERs.

THE *copses and woods* of this county have been decreasing for ages; and, in a few centuries more, they will probably be annihilated.

There are, however, still a few acres so occupied on the north slopes of Hampstead and Highgate hills; about one hundred acres on the east side of Finchley-common; and two thousand acres on the north-west side of Riselip; together about three thousand acres (exclusive of near one thousand acres on the remains of Enfield-chase, which are accounted for under chapter vi, on inclosing)*. Rather more than half the said quantity is wood, pretty well stocked with thriving young oaks; the rest is copse. I believe the whole is on a soil of yellow clay; which, at present, would not pay for the trouble and expence of clearing, and putting into a state of aration; at least, not if continued under the plough longer than would be necessary to lay it down in the best manner to grass; but in *that* state, it would produce to the community from five, to ten times as much as it does now.

* The forests, woods, copses and commons of this county, are nurseries for thieves. The security which they apparently hold out against detection, has tempted hundreds of the ill-disposed to commence footpads and highwaymen; and has also been the occasion of numberless murders and robberies being committed, and some of the perpetrators being gibbeted.—J. M.

The hills about Copthall and Hornsey are now appropriated to the scythe; though, but a few years ago, they were covered with wood. They are already of five times their former value; and, after being ten years more in grass, their produce will be worth, to the community, ten times more than the produce of the same ground would have been in a state of wood. Near Bowes Farm, several hundred acres of underwood have been grubbed up within the last eight or ten years; and the improvement of the soil is going on in a proportion nearly similar to the foregoing.

It is a matter of regret, that while the national councils are ringing the alarm of an apprehended approaching want of timber, *most of the antient parks are disfigured with trees that are mutilated, ruptured, and rotting as they stand. How much superior is the scene, where the trees are from twenty to fifty years old, perfect in every branch; healthy, beautiful, and profitable.*

Every acre of this county ought to be appropriated to the production of more valuable crops than timber and underwood. Surely copses, woods, and large plantations, should be raised in rocky soils; on the *tops* of downs and hills; and as high up the *sides* of mountains as there might appear to be any prospect of their succeeding. And also on the most dry and exposed situations; not as being places where they would invariably arrive at maturity in the least possible time, but as situations where nothing else would succeed so well.

The offering premiums for the general increase of wood, is going retrograde; or contributing towards a retroduction of uncultivated nature; instead of which, *this country ought to be in a state of garden-like cultivation**. No parts should

* " In many parts of North-America, the landlord would be much obliged
" to any body who would carry away the greater part of his large trees. In
" some

should be in wood, except such as are unfit for the production of grass, corn, and garden crops; nor would there be, in that case, any deficiency of timber and copse, if the millions of acres of bleak, rocky, and, at present, unprofitable situations, were to be fully planted.

“ Planting is capable of doing great mischief to a country, when applied to lands that ought to produce corn and herbage for the use of men and animals. No ground should be planted which is capable of being employed in the purposes of agriculture.”—(*M. R.*)

HEDGE-ROW TIMBER.

MANY of the hedge-rows of *this* county are disfigured by pollard trees; but in no degree equal to what they are in some *other* counties. I never saw hedge-rows in any district so barbarously used by the tenants, or that reflect so much want of attention on the part of the landlords, as those in Norfolk and Suffolk. Numerous are the fields in those counties, whose hedges are filled with pollards of every age, under perhaps two hundred years, of no value to the tenant, and worth to the landlord only a twentieth, or thirtieth, part of what those identical trees would have been worth, had they been protected from the spoliation of the farmer's axe. Including interest on the value of such trees, the amount would have been at least an hundred times more than it is.

“ some parts of the Highlands of Scotland, the bark is the only part of the wood, which, for want of roads and water-carriage, can be sent to market. The timber is left to rot upon the ground.”—*Smith's Wealth of Nations*.

Instances are not wanting in every county, of pollard-oaks abounding in hedge-rows; which, if they had been protected till grown into trees, and sold in their prime, including interest on their produce, would now have brought three times more money than the freehold would sell for which produced them. But, for want of such protection, they at present disfigure the estates on which they stand; and are only of a comparatively trifling value. Consequently the owners of such estates have lost the greater part of their property by the knavery of their tenants; the want of skill and diligence in their agents; and of attention or discernment in themselves.

The best remedy for this evil would be, for landlords to cut down all the pollards over the whole extent of their properties; and to sell them for what they would fetch. They would produce, on some estates, a considerable sum; which, at compound interest, would double itself every fifteen years. But the longer the pollards stand, the less valuable they will be. In the next place, a covenant should be entered into by the tenant, not to *top* any tree (nor to *lop* it to any greater height than ten or fifteen feet from the ground) under a penalty of *five pounds* for each offence; *which* sum the landlord would be entitled to receive of the tenant for every pollard discoverable at any time upon his estate. Any tree recently pollarded, would be positive evidence against the tenant; who should be invariably required to pay the penalty: and, when that is done, the landlord should cut the pollard down. If this method were adopted, and the young trees thus carefully protected, the estates would increase in beauty and value every year.

In a *national* point of view, this matter is of still greater importance. It is not conceivable, without the help of
calcu-

calculation, what an immense quantity of timber has been destroyed by the occupiers of land cutting the tops off the young timber plants. If this had been prevented, by a general law, I do not hesitate to pronounce, that no alarm would ever have taken place in this island, as to the want of timber for every purpose.

It would still be wise, and politic, for the legislature to pass an act for the effectually preventing farmers and others from cutting off the tops of timber trees, and plants likely to become timber. This regulation, in a century or two, would be the means of producing ten times more timber than ever will be done by rewards for plantations and woods. It would not only put wealth into the pockets of the land-owners in every part of the island, but would also be the most certain, and efficient means of providing an ample supply of materials for the future support of our *wooden walls*, the only *true bulwarks* of the nation. It would not be an easy matter to make *an accurate estimate* of the advantages to be derived to this country from such a measure ; nor does it seem necessary to go *minutely* into such a statement ; but, in order to gain a *slight idea* as to the quantity of hedge-row timber, let it be considered that, in well-inclosed, hedged, and cultivated districts, the *hedge-rows occupy* from *a twentieth to a tenth* of the whole surface. Even including the common fields, and cultivated slopes and borders of sheep-downs, the average quantity of land occupied by hedge-rows at this time, amounts to a twentieth, or two millions of acres : *all* of which might, probably, be made to produce timber ; more than *half* of it, however, would no doubt do so, by only trimming the lowest side-branches off to the height of ten, twelve, or fifteen feet from the ground. This would permit the air to circulate freely ; give every advantage to the occupier's crops ; and would leave sufficient tops upon the trees for all the purposes

poses of growth and rural ornament. *Under management like this, the hedges would every where present healthy, vigorously-growing, and handsome timber; would add very much to the profit of the land-owner; to the security of the country; and to the pleasures of the traveller.* A striking contrast this to the *present* appearance of hedge-rows; which, almost every where, disgust us with the sight of rotten pollards, and trees stripped of their side-branches, like May-poles.

In short, so great is the waste and destruction of timber in the hedge-rows, commons, and forests, of this kingdom, by the conversion of timber trees into pollards, that I cannot sufficiently condemn this barbarous practice.

WILLOWS, OR OZIERs.

“ THERE are many islands in the river Thames, and
 “ nearly all of them are rented by basket-makers, and
 “ planted with oziars for their use. Also, there are several wet borders of small extent on the side of the Thames,
 “ cropped in the same manner.

“ I am happy in being able to furnish the Board with
 “ the following short, but satisfactory account, containing
 “ the specific names of those raised in the neighbourhood
 “ of Brentford, the uses to which they are applied, and
 “ the manner in which they are cultivated.

“ 1st—The *salix vitallina*, or yellow willow, is cultivated chiefly by the nurserymen, and being of a tough
 “ but yielding nature, is used for binding packages of
 “ trees and shrubs in the drawing season; and for tying
 “ up the branches of wall and espalier trees.

“ 2dly

“ 2dly—The *salix amygdalina*, or almond-leaved willow, is a species of which there are several varieties, one of which is called by the planters “ the small red willow,” or, “ binding rod ;” it being chiefly used for binding the produce of garden-grounds. Another kind of this willow is at present known by the loose appellation of the “ new kind ;” it is of large growth, and produces a great crop ; is used both by the basket-makers and the corn sieve makers, and is fit for any work which requires a firm as well as a tough rod.

“ 3dly—The *salix viminalis*, or ozier willow—Of this species there are also several varieties, which are called among the planters by the name of “ the yellow and brown oziers,” or, “ Comb’s oziers.” They are chiefly used by the basket-makers, being very pleasant working rods, and, as they produce a great crop, are much cultivated.

“ These three descriptions comprehend the most useful varieties, and are the most profitable in point of crop, of any that are cultivated in this district. There is, however, a coarse sort of willow, known by the name of “ the Spaniard,” but whether it is a distinct species or not, I am unable to decide ; it might be rendered extremely useful in counties where much brush or underwood is bound.

“ The mode employed in the cultivation of willows is as follows :—The ground is, during the winter, dug a full spade’s depth, and left rough, to prevent the tides from running it together again before it can be planted.

“ The planting work begins in the month of March. The planter having procured the sets or plants, which are fifteen or sixteen inches long, cut diagonally off the strongest shoots of the last year’s growth, and care being taken that they are not cut near to the top of the rods,

“ that part being too porous to make a sound plant, the
“ ground is then marked out into rows two feet asunder,
“ and the setts are struck in the rows, eighteen inches
“ from each other, leaving about seven inches of the setts
“ above the ground. This work is very easily done,
“ without using even a dibble or a setting stick; but
“ when planted, care must be taken, by hoeing, to keep
“ them as free from weeds as possible; or, if the ground
“ be too wet for the hoe, a weeding-hook may be used to
“ keep them down: this is absolutely necessary to ensure
“ a good plantation. It is also equally necessary to keep
“ the ground well drained, to prevent the tides remaining
“ upon it any considerable time, for on that also depends
“ the firmness and good quality of the rods.

“ The willows are cut the first year with a bill-hook;
“ the shoots are cut off close to the stock, and bound up
“ in bundles, or boulds, as they are called, which measure
“ forty-two inches round, at sixteen inches above the butt
“ ends. The same process of weeding must be pursued
“ every summer, while they are shooting up from the
“ stem. The next cutting season a portion of them is
“ left to stand another year, where large stuff is wanted,
“ for the ribs of large baskets, &c.

“ The planting of willows is expensive the first year;
“ but if well managed, they produce a great profit, as
“ they improve in quantity every year. The profound
“ secrecy which every willow planter observes with re-
“ spect to his individual profits, renders it impossible to
“ ascertain to what amount this article is cultivated; but
“ greatly profitable as it certainly is, there are still many
“ parts on the banks of the Thames, well suited to the
“ propagation of this useful plant.

“ Oziers are grown on so very small a scale, that it
“ compels the basket-makers to hire suitable land, and
“ plant

“ plant it for their own use, which occupies their time
“ when they would otherwise be employed in weaving
“ baskets ; and every means which they have yet been
“ able to contrive, is insufficient to supply a quarter
“ of their wants. They would willingly pay a high
“ price for oziers grown for their own use ; and there is
“ too much land in every county, so neglected in its
“ drainage as to be unfit for every other crop ; much land
“ that would be cheaper at four pounds under oziers than
“ it is now at eight shillings ; vide Arts and Sciences.”

Foot's Middlesex.

CHAPTER XI.

WASTES.

THIS chapter is comprized in the following sections,
namely,

COMMONS, - - - - -	page- 98
ENFIELD-CHASE, - - - - -	116
STANWELL-INCLOSURE, - - - - -	126
SHEEP-DOWNS, - - - - -	127
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CHAPTER XII.

IMPROVEMENTS.

THE *improvements* of this county decrease as the distance from the capital increases. In the more remote parts, much of the land lies waste, or in a state of nature; more is in common fields, and, consequently, has only received the slightest degree of cultivation; but as we approach the capital, it is mostly in gardens, and therefore in the highest state of improvement.

*If the value of agricultural improvements were, as I think they ought to be, estimated by their capacity for giving employment and support to human beings, it would appear that Middlesex is so very far short of perfection, in this respect, as to have advanced in its course towards it only one-fifth part**; and every other county stands much lower in the scale.

With respect to the question, whether it is better that improvements, especially of the more expensive kind, should be made by the *landlord* or the *tenant*? the answer will, I think, most readily be found, by first determining

* Divide the county into ten equal parts, and the support which they give to human beings is nearly in the following proportions, namely,

1 of those parts support 5 persons per acre, which I shall call perfection,	5.
1 other ditto - - 2 - - - - -	2.
1 other ditto - - 1 - - - - -	1.
1 other ditto - - $\frac{1}{2}$ - - - - -	0.5
5 other ditto - - $\frac{1}{4}$ - - - - -	1.25
1 waste, - supports nothing - - - - -	-

10 supports rather less than one per acre, - - - - - or 9 $\frac{1}{2}$
which is not quite one-fifth of what it is capable of doing.—*J. M.*

which

which can carry them into effect at the least expence. On large estates it would, generally, be the *tenant*, inasmuch as he is supposed to live on the spot; and, having every operation executed under his immediate inspection, will of course be able to keep down the expence as much as possible. On the contrary, the large proprietor or his steward generally live at a distance, and therefore cannot give that close attendance to the business, which is necessary to prevent the expences from exceeding, in a considerable proportion, those that would arise under the management and conduct of an intelligent and prudent *tenant* laying out his *own* money.

I am very much inclined to think that, in case data sufficient could be collected to ascertain the fact, it would be found that, generally speaking, *tenants* are able to carry into effect most kinds of improvements at little more than half, or two-thirds, of the expence they would cost the *landlords*; besides, the improvement, being made by the tenant, gives the landlord the obvious advantage of the most perfect security for the receipt of his rent. Yet there will certainly occur some cases, in which it may be most advisable, and proper, for the *landlord* to pay the expence of any improvement that may, and ought, to be made on his estate. As, for instance, where an honest and industrious *tenant* may be willing to pay *interest* for the money expended in making such improvement, but cannot afford to disburse the *original cost*. Humanity says that, in such a case, the tenant ought not to be turned out: the interest of the landlord, and national policy, require that the improvement should take place; it is therefore expedient that the *tenant* should do it, at the *landlord's* expence; the *former* paying four or five per cent. interest on the expenditure of the *latter*, in addition to his former rent: whereby the landlord will not only have the satisfaction of
encou-

encouraging a spirit of industry in one of the most valuable classes of the community, but will also benefit both himself and the public by the improvement of his estate.

On the whole, I am of opinion that *the best mode of letting estates would be, that the tenants should make the proposed improvements at their own expence; and that the landlords should grant them leases, proportioning the rent, and number of years, to the nature, and supposed expence, of the intended improvements.* This method would, I think, have the merit of rendering complete justice to the interests, and of promoting the advantages of both parties.

But the *landlord* should never forget, that it is *his* business to have the lease drawn up with the most scrupulous attention, and by persons of competent judgment*: with particular covenants, that the proposed improvements shall certainly be made; that the land shall be put into, and continued under, the most improved course of husbandry; and that every part of the farm and buildings shall be surrendered up, at the end of the term, in high condition and repair.

SECT. I.—DRAINING.

THE *inclosed grass land* of this county, with very few exceptions, and those only of small extent, receives this improvement by means of surface drains.

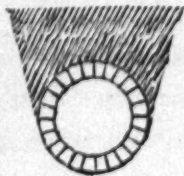
The *light land district*, from its filterating nature, is always sufficiently dry. The *clayey loams*, that are in ara-

* The draught covenants should be drawn by a land-surveyor, and afterwards submitted to the correction of an attorney or a conveyancer, and, if need be, they may consult together.—J. M.

tion,

tion, are ploughed into ridges and furrows, which lead the superfluous rain water into the water-furrows, provided for that purpose, and it flows from them into the ditches and rivulets. This kind of *surface drainage* answers perfectly well on the land of this county; as it will, undoubtedly, for any other, except in springy or rotten places; where another kind of draining will certainly be necessary*.

Springs.—Every spring makes its appearance in a local manner, and the water may be carried off by means of one main drain made across the rising ground, immediately above the place where the spring shews itself, sufficiently deep to cut off the supply of water. In this stage of the business *the nature of the soil* must be particularly considered; as the future operations must be entirely regulated by it. Should *it be a loose gravel, or a quick-sand*, perhaps a barrel-drain, turned with either brick or stone, thus:



the *lower* half laid in mortar, and the *upper* half dry, would be both effective and durable. In soils of a *tenacious kind*, the drain, after being dug, might be filled with green bushes (not in leaf), or with stones that are free from soil, in such a manner as certainly to intercept the water. The wood, or stone, should be covered with a thin layer of wheat, rye, or bean straw; or with the stubble of either of them; or with reeds or heath. In either case, the remainder of the trench should be filled up, by *first* placing the more large and loose materials; *next* the smaller; and *lastly* the best mould, level with the surface of the adjoining ground.

* "All arable land may be effectually drained by ploughing it into ridge and furrow; narrowing the ridges as the wetness of the soil increases: which renders hollow-drains unnecessary, except in springy soils or peat bogs."—*Mr. Jenkins.*

This method will only require further, a small drain or two to be made to the nearest sufficient fall into a ditch or rivulet, for the purpose of conveying off the water that will be intercepted by, and collected into, the said main drain*. Very frequently the water, when collected in such main drain, may be got rid of by boring a number of holes in the bottom of it, through the *tenacious* soil into a more *open or porous* one below.

Bogs.—I have no knowledge of there being any *bogs* within this county; but, wherever they may be, draining is, unquestionably, the first step to be taken towards *their* improvement. For the accomplishment of which, Mr. Elkington's mode might be resorted to, undoubtedly with great effect; though we should not be too sanguine in the matter, or imagine that it is, in every case, an easy operation. I much fear, that there are *some* bogs which could not, without great difficulty, be drained at all; and *others*, that would cost the value of the land, in drain and machinery, to effect it. Yet, notwithstanding some *unsuccessful trials*, we ought not to be entirely discouraged from the attempt, where there is a tolerable prospect of succeeding in it. The cases are no doubt very numerous, in which this sort of land may be effectually drained at an easy expence; and thereby brought from a state of *annoyance*, to *yield considerable profit* to the owners and the community.

After this kind of soil has been completely drained, it should be cultivated as peat-earth. (*For a description of this mode of culture, see the article tillage*).

* In making hollow-drains (except such as may be made with bricks or stones) in land that has a quick descent, care should be taken that the drains have an easy gentle current; for, when they have too quick a fall, they are very apt to excavate, and lose their support below, in which case a very small pressure from above entirely destroys them.—*J. M.*

Commons.—The *drainage* of the commons of this, and indeed of every other county, is totally neglected; and consequently they are, in various places, and particularly during winter, under water. The soil absorbs as much of it as it can contain, and the rest remains on the surface in a stagnant state; which must, manifestly, be injurious to the health of both man and beast. No effectual remedy can be found for this evil, except inclosing such commons.

There are many *dense soils* in grass, which are chilled by the water lying too long on the surface: this defect might be remedied, and the soil rendered perfectly dry, by means of *open drains* only. In order to have *covered drains* sufficiently deep in this kind of soil to bear the treading of cattle over them, they must be laid *so far beneath the surface*, that the water, from the tenacity of the soil, will not be able to filter into them. But as this objection is entirely obviated by *open drains*, it seems advisable to make *such drains*, and to keep them open when made; except in *paddocks, lawns, and the like*, where *open drains* are, for obvious reasons, objectionable. As the drains in *such places* have only the surface water to carry off, they need not, nor indeed should they, be made deep; but of such a depth only, as to admit of their being so nearly filled with willows, or other *green** wood, as to have only a tender loam and turf, of a few inches thick, placed upon the twigs, through which the water would be certain to percolate †.

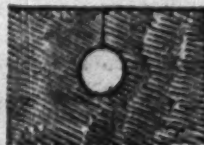
* The importance of using *green wood* in drains, is fully ascertained in Mr. Hassell's valuable Report of Caermarthenshire, page 27; and in the same place he has suggested a very improved method of placing the wood for particular soils.—*J. M.*

† “ Draining meadows with hollow-drains, particularly strong clayey land, has been found a great impediment in dry seasons; and in wet, I have seen the water stand on the drain. The only method by which I could preserve the meadows for a productive crop, is, not to have heavy cattle in them after November. I approve of hollow-draining squally lands. But nothing is equal to stone or brick laid in, and covered with wheat-straw.”—*Note in the margin of one of the returned Reports.*

In

In the winter of 1795-6, I made one of the "Committee of Agriculture," appointed by the Society for the Encouragement of Arts, &c. to enquire into, and examine, the merits and performance of a *mole plough*, invented by Mr. Adam Scott, for the purpose of making hollow-drains. It appeared to be well calculated for making a drain of *three inches* diameter (*the size of the borer*), at about a foot below the surface, without breaking or turning up the soil; and without requiring any materials to be used in the formation of it, as the whole business was completed by drawing the plough along the place marked out for the intended drain. An idea was entertained, that it would drain *ten or fifteen acres* in a day, at an expence of less than one shilling an acre, even where it might be deemed necessary to make the drains within *five or six yards* of each other. The experiment took place on a clayey soil within Marybone-park; the power was increased to six horses, which broke the tackle; and, after two days trial, it completed about two hundred yards of drain, as perfectly hollow, round, and sound, as a leaden pipe. The sides were so closed, as entirely to shut out the filtration of *water*, and therefore *none* oused from the soil (which was wet) into the drain; and, when water was poured over the drain, it could not, generally, penetrate into it, though at some places it certainly did. When the surface was removed, and water was put into the upper end of the drain, it ran through the whole length, and out at the lower end, in the most free and uninterrupted manner. The drain was cut asunder in various places, to admit of observation and inspection. A transverse section of this drain appeared thus:

and it seemed to be so closed at top, as to prevent any water passing through the nick or opening above it, which



T

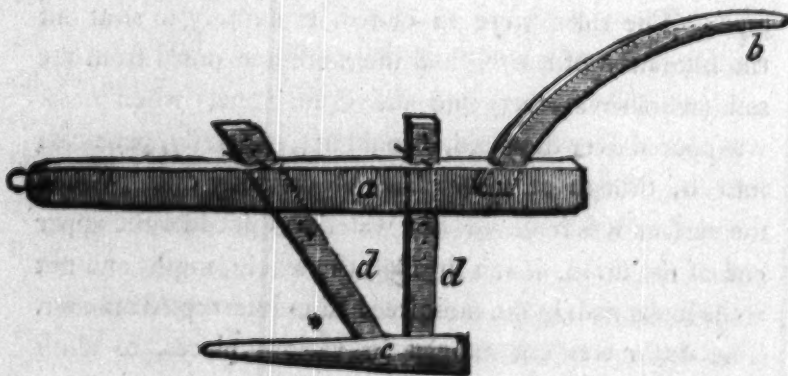
nick

nick was intended to have been about a quarter of an inch wide, and to have remained open. *A common plough* might be held so as to cut out a small triangular trench thus :



which would be quite sufficient to lay every soil of this tenacious kind, dry ; as I have myself experienced on my own farm.

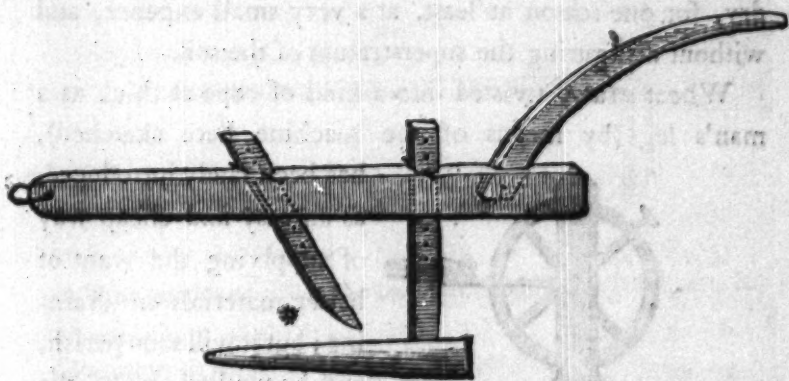
The plough under review, consisted of a strong ash beam, *a*, with a handle of the usual construction, *b*. The mole, or borer, *c*, was a cast-iron conical share, of about three inches diameter at the largest end ; and was annexed to the beam by means of two wrought-iron flat bars, *d d*, with sharp front edges so as to cut the soil. These last passed through the beam, and contained a number of holes, through which pins were put, in order to determine the depth of the intended drain.



It was found that the part marked * could not clear itself of bones, sticks, rags, stones, or such like obstructions

as

as it met with; and therefore, in February 1797, another trial was made, with the plough altered as under.



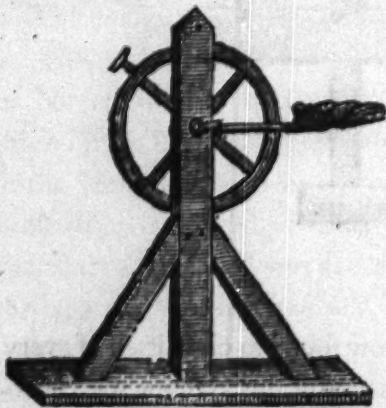
The part marked * was now found to clear itself of every obstruction, and completed several drains, moving with nearly as much speed as any heavy plough usually goes. The soil was a loam of a medium density, rather approaching to the tender; the power applied was six horses; and the labour appeared to be full as much as they could, or ought, to perform when in constant work.

It is necessary, in using this plough, to guard against the beam's drawing on the ground, which, in a dense soil, was difficult to prevent; it was this pressure of the beam on the ground, which closed the nick made by the coulter, in the experiment made in 1796. But in the *last trial* this was avoided, by keeping the beam six or eight inches above the surface, and the nick consequently remained open.

Should this implement be further improved by the addition of wheels, for the purpose of regulating the depth of the drain, and so constructed as to be used with perfect ease

upon grass land, without the horses poaching (as they do at present), by means of the great weight, or draught, it might be annually applied with advantage, at the setting in of winter; as it would be the means of keeping the land dry, for one season at least, at a very small expence, and without disfiguring the superstratum of the soil.

Wheat straw, twisted into a kind of rope as thick as a man's leg (by means of the machine here sketched),



has been lately introduced, as an easy and cheap way of supplying the want of better materials in draining; but it will soon perish, and be washed away; the channel left in its place, will, in a loose soil, be immediately closed up; while in a dense soil, the

water will not filter freely into it. Heath, where it is at hand, is durable and proper for the purpose of filling drains; but there need be seldom any difficulty in procuring materials, as it is well known that green wood, of every sort, is best adapted for such use: even green willow is known to have lasted for ages, in such situations.

The two following sketches, represent a spade and scoop used in draining.

No. 1, draining spade, to dig up the bottom spit.

NO. 1.



No.

No. 2, the scoop, pointed as No. 1, to scoop out the loose mould, &c. at the bottom of the drain, in order to make it quite clear of all obstructions previous to putting in spray-wood, &c.

NO. 2.



The prices of draining on Enfield-chase have been, for

	£.	s.	d.
Common drains, 20 pole 18 inches deep, each	0	3	0
drain - - - - -			
Principal drains, 2 feet deep, of the same length	0	5	0
Burr to each score - - - - -	0	0	2

The labourer to find tools, and keep them in repair.

The usual distance at which the drains are made on the chase, is a short pole from each other.

Mr. James filled drains on the chase with small flints; but in less than four years the effect had ceased. This circumstance was imputed by him to the accumulating particles of earth which were carried down by the current, and detained by the gravel which formed the drain,

SECT. II.—PARING AND BURNING.

“ *Paring and burning* has been practised to some extent
 “ on Enfield-chase, and very productive crops have been
 “ obtained by it.”—*P. Foot.*

But the fear (excited by *theoretical* writers on this subject), of exhausting the soil, by such *bulky crops*, induces people to plough up tough, wiry, benty, and heathy, old sward, without paring and burning; to the very great injury of the parties. Many there are who fall into this error; and among the number, were several of the owners of allotments on the chase*. As that did not answer, they

* “ It has been a common practice on the chase, to break up the ground, and sow it with white or black oats, but seldom to any advantage. The thick tufted, coarse, implicated grass, being turned in, carries most of the moisture from the seed, and proves a harbour for grubs, slugs and worms, which are ruinous to the crops. Add to this, the only chance of the seeds effectually vegetating, is between the furrows, where a scanty portion of poor earth is brought together by the harrow. Were it possible to make narrow furrows, the prospect of a return would be greater; but this would be very difficult, if not impracticable in most places, as a weight of earth is required to keep the harrows down, and to give them an opportunity of operating without tearing up the work.”—*P. Foot.*

A note on the foregoing in the returned Reports—“ This observation is a strong argument in favour of burning the turf, and afterwards making a summer fallow for turnips.”

Mr. James too admits, that lands uncultivated, or in their wild and original state, partly forests, such as the *chase* was before its inclosure, will gradually, by adventitious circumstances, as the fall of leaves, the decay of the vesture, imperceptible fermentation, the nutritious matter that the soil imbibes from the air, acquire a complete envegetic power, according to the properties which the respective lands possess, of acting upon such of the vegetable kingdom as are consensaneous to them; that the breast-plough affecting barely the turf or sward, leaves a great part of the vegetable matter behind, which being ploughed, and rendered more pulverized by means of the ashes being spread upon it, the roots of the plants have more room to expand, and the nutritious particles are disposed to administer their whole support to the crop; and that the whole power of the soil being

“ by

they are now very sanguine in their expectation of success from an experiment of *paring only*, and carting the parings off the land into heaps, there to remain until the mass be reduced to mould; when these heaps are to be re-carted, and spread on the land from which they came. This is a laborious, expensive process, that will require three or four years to perfect, even for the smallest piece of land, and much better suited to the *whim* of a man of fortune than to the *pocket* of a farmer.

The impropriety of breaking up this kind of land without paring and burning, is manifested in the neighbourhood of Beach-hill, where land, after twenty years inclosure and cultivation, is in a worse state now than it was originally. Well would it be for the owners of such allotments, if they could now pare and burn it; but it has been ploughed, and, not producing more than what the vermin destroyed, laid down in so rough a state to grass, as to be incapable of being pared and burnt. The original wiry bent, and dwarf shrubs, are now growing in full vigour.

On the *inclosure of Stamwell*, in this county, the allotments on Hounslow-heath succeeded well under the perfect

“ by these means exerted to one end, a good crop may once, or perhaps twice, be obtained by this mode of agriculture: but he contends, that it is by a sacrifice of a number of future good crops, which might be procured by a different process.”—*P. Foot*,

Against which, the following valuable observation was made in the margin of one of the returned Reports.

“ If the turf is so impoverished as to be of no use externally, its property cannot be altered by ploughing it up, and turning it into the soil; on the contrary, the latter, by this practice, is burthened by an inert substance, that cannot in any possible way aid subsequent vegetation. But very different is the effect produced by burning the turf. Its sterility only vanishes by this operation, and in its stead leaves a fertilizing power, that, under the circumstances, could only be obtained by such chemical process. This power united with the soil, produces a principle of attraction that quickly furnishes a subtle nutriment much more advantageous than that which may have escaped in the original decomposition.”

practice of paring and burning; and ill, where the turf was ploughed without the application of fire. In the *former* case, the land was immediately fit for turnips, tares, barley and clover: in the *latter*, the tough wiry bent, heath, and dwarf furze, kept the land too light and spongy for any crop. Even rolling cannot keep it down, for its elasticity raises the soil soon after the roller has passed over it, and it is of so imperishable a nature, that it is likely to plague the farmer for many years. *The difference between the two methods of breaking up rough ground, is more than the value of the freehold in favour of paring and burning, which immediately opens a source of great profit; whereas the other proceeding leads to nothing but expence and disappointment.*

The before-mentioned are the only *two* instances in this county, that have come to my knowledge, and they are *both* decidedly in favour of the fire. In various other counties, I have observed the same decided preference due to paring and burning. The instances which are produced against it, have arisen from the *rapacity* of the occupiers; who finding, from the first crops of turnips and corn, that the land was in great heart, have sown wheat fourteen years in succession, till the soil was wholly exhausted*. Certain *theoretical reporters* have, in consequence, condemned paring and burning, as "the most infamous of all practices," without passing any censure on the *knavish* occupier, and the *negligent* land steward who permitted so infamous a succession of crops. There is no more propriety in thus *generally* condemning paring and burning, than there would be in exclaiming against all warm stimulating manures.

But paring and burning has more merit than any other manure, in its property of converting heath, furze, shrubs,

* As related by Mr. Goodchild of Staffordsea, Hants, to Mr. Jenkins.

and wiry bent, into coal, most fitly prepared for the food of plants; and it will pulverize such a soil as much in two years, as all other means can effect in twenty*.

Paring, burning, and liming at the same time, is the most efficient and cheap dressing that can be given to land on the breaking up of commons and rough pastures, where the natural productions are ling, heath, furze, rushes, and coarse grass. On whatsoever soil they may be found, it never has failed of advancing the land to the first degree of fertility; and he must be a very bad farmer who cannot continue, for any length of time, land so enriched, in a high state of productiveness.

Suppose two or more of each of the crops of turnips, tares, cole, and clover, to be raised and fed on the soil, and the land then laid down to grass, without corn, in such case, it cannot be doubted but the herbage would be abundant, and coveted by all sorts of cattle; and its duration, if continued in pasture, would be co-eval with the land.

The particulars brought against this practice, totally fail in proving that paring and burning is in the smallest degree of an impoverishing nature; but they demonstrate the ruinous practice of a succession of corn crops, and the necessity of strong covenants, and a watchful attention, on the part

* " Paring and burning reduces vegetables and their roots into coal and ashes, and thus prepares both a stimulant and nutriment for plants; it also destroys the old sickly roots, and thus leaves room for others, younger and more vigorous."

" Coal is an essential ingredient in the food of all vegetables: it is found in all vegetable and animal manures that have undergone putrefaction, and is the true basis of their ameliorating powers."

" Burned clay and brick-dust, improve the texture of clayey soils, and supply also the carbonaceous ingredient."—*R. Kirwan.*

" The coaly principle may be exhausted by too many crops;—but if these crops are consumed green on the land, the dung and urine of the cattle will increase the carbonaceous principle.—*J. M.*

of the landlord, to their due execution, in order to secure the land against being exhausted.

The hills on each side of the meadows which produce the *Newbury peat-ashes*, consist of chalk, easily dissolvable by heavy rain, which washes it off the ridges, down the furrows, ditches, and streamlets, to the low grounds, where mixing with the floods, it is floated over the meadows, and deposited in the peat. Consequently the peat of this district differs from that of most others, by the quantity of chalk which it contains; and, when dug, dried and burnt, the fire reduces the chalk to lime, and the rest to ashes. *Hence Newbury ashes are a mixture of lime and vegetable ashes, and it is very probable that any common peat-ashes, or the ashes of rough grass land, of turf, heath, furze, ling, wood, &c. produced by the operation of paring and burning, being mixed with chalk lime in due proportion, would be equally fertilizing as these noted ashes.*

The operation of paring turns the *sod* upside down, and, when covered with heath, the shrubs keep it raised a few inches above the ground, so that it readily dries sufficiently, and is mostly burnt in that state. This is a saving of much trouble and expence, the ashes are thereby more equally spread, and the fire operates over the entire surface of the soil below where the spade went, which is to a greater depth than usual. The following is an instance of the success of a case of that kind.

“ The Rev. Mr. Cooke, in the month of April 1792,
 “ determined, I understand, to make a course of experi-
 “ ments on a farm which he held in the West Riding of
 “ Yorkshire, by burning the sward all over the surface,
 “ in the state in which it was left by the paring-spade.—
 “ The land was intended to have been ploughed imme-
 “ diately after it was burned; but this was deferred by
 “ other business of the farm, for above four weeks, when,
 “ to

“ to his astonishment, he discovered better than half a
“ plant of spontaneous grass, where nothing but heath and
“ ling had grown before. Agreeably surprized by this
“ unlooked-for circumstance, he suffered it to remain in
“ the state it was; and the grass not only thickened very
“ fast, and grew quite green, but, being the spontaneous
“ produce of the earth, and not arising from seed that had
“ been sown, continued permanent.

“ The spontaneous production of this luxuriant grass,
“ he accounts for by the parings being burnt all over the
“ surface instead of in heaps, and never suffering it to
“ burst into flame sufficient to exhale the pabulum existing
“ in the soil.

“ The land on which this experiment was tried, is a black
“ peat earth; the former produce of it heath and ling.
“ The expence of paring and burning he calculates at
“ 16s. an acre, and the present appearance of the land, he
“ says, affords a reasonable expectation of its being here-
“ after worth at least 16s. an acre per annum.”

Inclosing has been carried on in an extent more than ten times, greater in the *north* of England than in the *south-east*; and the opportunities of observing their effects, have of course been proportionally many. Most of these new allotments of the commons have been broken up by paring and burning. The few who ploughed their land without this operation, have been much mortified by their own crops not succeeding so well as their neighbours’.

It may be proper to observe, that I am by no means an advocate for the burning of any turf that will readily harrow to pieces; that produces a fine herbage, and which is usually fed bare; nor indeed for the ploughing it at all, except its produce be very scanty, and manure scarce; and then only for the purpose of growing and feeding three or four green crops on it, and laying it down to pasture again.

Land,

Land, when pared and burnt, yields its treasures very freely: this puts it in the power of tenants, with short leases, to exhaust the soil by successive corn crops; and which may be continued so long as to leave the land a mere *caput mortuum*. But this is occasioned by landlords not granting longer leases, making proper covenants, and seeing them complied with.

For instances of great improvements produced by paring and burning, see the Reports of North Yorkshire, p. 55, 109, 113, 114, 115, and 116; Boys' Kent, quarto, p. 38, 45, and 46; East York, p. 37, 39, 50, &c.

Further, I have known much land, worth from one shilling to two shillings and six-pence an acre, advanced, by paring and burning, to ten, twenty, and even thirty shillings an acre, on twenty-one years leases.

Paring, burning, and chalking, is an excellent method of breaking up wood sour land.—*Wilts*, p. 94.

Paring, burning, and liming, is equally proper for black peat earth, though peat earth may, in some cases, be greatly improved by liming the old turf without breaking it up.

NOTES IN THE MARGIN OF ONE OF THE RETURNED-REPORTS.

" Paring and burning is the best method of proceeding in new inclosures
 " where heath and furze grow, as those seeds cannot be destroyed by good
 " husbandry in any fixed period. A proof, in 1793, of furze seed not being
 " destroyed within a period of seven years cultivation on new inclosure
 " where furze grew—some land in South Mims allotment part of Enfield-
 " chase, had been cultivated nine years; was apparently very clean, suffi-
 " cient to lay down, which was done in 1792 with clover and rye-grass;
 " after mowing the first crop (1793), there appeared to be young furze spring-
 " ing up, and on examining, it appeared general. The spring of 1794 it
 " was thought advisable to turn it again to the plough, therefore it is most
 " probable no person has been able to ascertain how long a period the seed
 " of furze, by cultivation, can be destroyed. Which observation is very ob-
 " vious, that paring and burning in that case is absolutely necessary.—*Anonymous*.

" Paring

" Paring and burning any black peaty or heath ground, without lime, is a bad practice; the ashes alone would produce two or three miserable crops of oats, though no herbage; but with lime, good wheat, oats and grasses."—*Cardigan*, p. 27.

" Paring and burning is but little used; but when it is, no management equals it: the farmers on our hills are shy of acknowledging its benefits."—*Worcester quarto*, p. 6. *Appendix*.

SECT. III.—MANURING.

THE greater part of the manure used in this county is carted from London; being *part* of the sweepings of a surface containing *three thousand acres of pavement, in streets and market-places, and the dung produced by 30,000 horses, 8000 cows, and 650,000 inhabitants.*

The *whole* quantity thus produced is probably not less than *five hundred thousand cart-loads* *; about *one-half* of which is supposed to be annually spread on the land of this county. *Unfortunately, ninety-nine parts in an hundred of the soil of privies is carried, by the common sewers, into the Thames; which is a very great loss to agriculture, as night-soil is not only more quick in its operation than any other dressing, but is by far the richest manure that ever was laid on land* †.

The farmers pay at the stables, for a mixture of strawy-litter and horse-dung, about 2s. per cart-load (though some

* This county contains about 179,200 acres. Suppose the produce of 120,000 of these is sent to London; to which add the produce from 30,000 acres in Herts and Essex, and from 100,000 acres in Surrey, Berks, Kent, and all other places, and it will make a total of 250,000 acres, the produce of which is brought to London, and may be supposed to be two loads per acre, which is *half a million cart-loads of produce converted into manure annually*, exclusive of the inside of slaughtered cattle and animals.—*J. M.*

† Three or four cart-loads are sufficient for the first dressing of an acre, and afterwards one load per acre per annum would keep it perpetually in heart.—*J. M.*

allow their carters 2s. 6d. a load ; the man to get it as cheap as he can, which he sometimes does for 18d.) heaped so as to contain between seventy and ninety cubical feet.

The price of dry street slop at the dunghills is 1s. per horse ; the soil of privies, dry, 1s. 6d. per horse ; bones raw, boiled, or burnt, and coal ashes 6s. a load ; soot 8d. a bushel ; horn shavings from 6s. to 7s. a sack, of eight bushels, well stuffed ; leather dust and shreds, 2s. 8d. a sack, of five bushels, well stuffed ; the scrapings of sheeps' trotters, calves' feet, cow-heels, 8s. a quarter ; woollen rags from 2s. 4d. to 3s. a hundred weight ; and hog's hair, if wet, 15s. a cart-load.

The foregoing are the prices in London.

The chimney-sweepers who sell *soot* in London, mix with it ashes and earth, sifted very small and fine : this they term "*spicing the soot.*"

The expence of stable litter, when back carriage is reckoned, to South Mims, which is thirteen miles from London, is 12s. a load ; and at Hendon, which is seven miles from London, 8s. 6d. a load, with four horses. But if the farmer sends his team on purpose for manure, which is very often the case, the expence of each load at the *former* distance will be 22s. and at the *latter* 15s. 6d. per load, with four horses ; or 2s. 6d. less in each case when they do it with three.

The barge-men on the river Thames supply, from the different dung wharfs, those cultivators of land who reside on the borders of that river, at a much cheaper rate. The manure which they carry consists, generally, of the sweepings of the streets, &c. though it sometimes has a small quantity of stable litter mixed with it.

The street slop is delivered, at any distance capable of being reached in one tide, at the price of about four guineas

guineas for seventeen or eighteen cart-loads, each load consisting of nearly two tons weight: this they call *cold manure*. The same barge being filled with stable litter, they call *hot manure*, and deliver it in like manner at five guineas.

Street slop is also sent, from the different wharfs, by the river Lea canal, in barges which carry about thirty tons, or fifteen cart-loads; and delivered as far as Enfield, which is about thirteen miles, for 4l. The price of stable litter or dung is about 20s. more.

Chalk is brought by the same canal, from Ware-park, and its environs (Herts) a distance of about eleven miles, and delivered at Enfield, at the rate of 4l. for about thirty tons; and is found to answer with tolerable success.

Sheep-folding is resorted to, in order to manure part of the land in different parishes round Hounslow-heath and other commons.

The *gardeners* manure their land *twice* in every three years at least. The *farmers* in general, only *once* in three or four years. The *former* at the annual expence of 10l. and the *latter* at from 30 to 40s. according to the distance of carriage, and the quantity laid on *

The farmers of this county also collect *road-scrapings*; *mud arising from the cleansing of ponds and ditches*; and the *top-mould from gravel pits, &c.*; all of which they lay in the most convenient places for future use, as *bottoms for dunghills*. On these bottoms they cart all the dung produced in their respective farmeries, and also what they bring from London, or collect from the several inns on the road. To these they sometimes add chalk, ashes, bricklayer's rubbish, soap boilers waste, &c. In this state

* Since this account was written (which was in 1796) the foregoing prices have advanced about 20 per cent. occasioned by the tax on draught-horses, and opening a new market for manure through the Uxbridge canal.—J. M.

the heap lies till within a month of the time they purpose laying it on the land; when they turn it, and mix the whole as intimately together as possible; shaking the larger pieces to atoms, and tossing such as are too dry, to the inner part. Thus treated, it more perfectly incorporates, and completes its putrefaction while it continues in the heap, which, as before observed, is about a month, when it is carted and spread on the land*.

This method of laying *bottoms for dunghills* is a most excellent practice, and cannot be too much recommended to the attention of farmers, as it *preserves the precious liquor which distills from the dung during that heating and putrefaction which necessarily takes place while it lies in the heap*. This beneficial practice, however, is not universal in this county; there are some slovenly farmers who neglect this necessary precaution; and, consequently, one half of the most fertilizing particles, nay, the very essence of the dung itself, runs into the adjoining ditches, and is lost.

It is rather a general opinion, that dung should, in all cases, be quite rotten before it is spread on the land; though, in consequence of all root crops succeeding best on a light soil, it has been the practice of many farmers to use stable litter, hot with putrefaction, and about half reduced, for potatoes. This is, probably, very right on a soil that is rather *too dense* for that crop; but, on a true *carrot soil*, it may be more proper to use the dung after all its parts are dissolved, and incorporated into one complete mass, by means of putrefaction†.

The

* During the latter end of September, and all the month of October, some farmers cart the dry street slop on to their grass land daily as they bring it from London.—*J. M.*

For additional information as to the management of dunghills, see kitchen-gardens.

† This part of the subject is not so clearly ascertained as could be wished, for some of the most attentive farmers decide this question the contrary way;

The dung of fat animals is unquestionably more rich, and consequently possesses greater powers of fertilization, than the dung of lean ones. The quality of the dung of every sort of animal will, in a great measure, be proportioned to the goodness or poverty of its food. Thus, when the animal is fed on oily seeds (as lint, rape, &c.) it will be the most rich; when kept on oil-cake (or those seeds deprived of part of their oil) the next; on turnips, carrots, &c. the next; on the best hay next; on ordinary hay next; and on straw, perhaps, the poorest of all. *The dung of lean hard-working cattle, feeding on straw, is poor indeed!*

Manure is undoubtedly the great cause of fertility. (The Middlesex farmer says "there is nothing to be done without 'mendment'"). The soil is grateful, and, for all the dung laid on it, never fails to return the principal with large interest.

way; and insist upon it, that all dung produces greater effects when laid on in the midst of its heat, while it is in the most putrid and offensive state. It must be confessed, that the great advantage of showering the putrid water of flax-pits, and the Flemish method of applying a prepared stinking liquid manure, make strongly in favour of this side of the question. I think Dr. Ingenhouz proved, that it is the offensive particles of matter which nourish plants. It is well known that dung, which has lain long enough to be completely reduced, and turned once or twice, has lost its offensive smell, and probably some of its most fructifying particles.—*J. M.*

"Dung is a proper ingredient in the appropriated manures of all sorts of soils, as it supplies the carbonaceous principle."—*R. Kirwan.*

There is a much larger quantity of dung carried on the Edgware road, than on any other in the county; and the number and size of the dunghills on the side of this road is astonishing.—*J. M.*

"I prepare the bottoms of most of my dunghills with pond mud. After the dung is rotten, I turn the whole over, and mix it in the turning. When mud or mould is not to be had, the yard should have the shape of a dripping-pan with a well in it, and the liquor should be carted out, and showered over the land."—*Mr. Jenkins.*

"I never turn my dunghills more than once, and think more would be injurious; and always lay mud, mould, ditch-earth, &c. under my dunghills."—*J. Marsb.*

In this county, the produce of the land fetches such a high price at market, that no cattle, by eating the crops either in the field or the home-stalls, would by any means bring so much. This necessarily has the effect of drawing *all* the produce to market, and the land is kept in heart with the dung brought by the carts on their return home. In places at any greater distance from town, *the most effectual way of manuring, is to raise green crops, for the purpose of feeding sheep and bullocks with them on the land.* This is the only method by which the loss of very nearly all the urine (in itself perhaps equal to the dung), and a considerable part of the dung, can be prevented; for, in the stables, cow-houses, sheds, fold-yards, and dunghills, even under the best management, there is great waste, perhaps of half, including dung and urine. Under ordinary management, three parts of this manure is lost; but, in the soiling of tares, turnips, cole, clover, &c. in the fields, there is no loss; the whole is immediately applied, without the cost of carriage, to the enriching of the soil.

In this county, the grass land receives most of its manure between the middle of September and the end of October; a time when the sun is not so hot as to exhale its most volatile parts; and yet a sufficiently early season for the land to bear the drawing of loaded carts over it, without being poached by the horses. The rains which follow, dissolve the salts gently into the ground, where they nourish the grass all the winter, and prepare its roots and buds for growth early in the spring. *This is supposed, and I think with good reason, to be the best season for laying manure on grass land.*

For the most advisable time for manuring arable land, see the several crops, such as tares, clover, &c.

Excessive falls of rain powerfully dissolve the animal dung dropt on all land, and they are also too generally suffered to wash
the

the dunghills and dung-yards, in every part of this island, which are very frequently laid on slopes, or shelving ground, as if for the very purpose of being so washed, and for the dung-water to run off. Thus the salts become dissolved, and such of them as do not percolate into the ground, are floated off, together with the richest mould, along the furrows, drains, ditches, streams, and rivers, towards the sea. Hence the superior wisdom of those who take every opportunity of turning water thus impregnated, over every possible part of their land, in such quantity as is best calculated to ensure the depositing of its rich contents,

For additional observations on manuring with putrid water, see the section on watering.

Lime.—There is neither limestone nor chalk in this county; nor is there any lime burnt in it; though there are kilns for the burning of both chalk and limestone at Nine-elms, near Vauxhall, on the Surrey side of the Thames. Chalk lime may be obtained, in any quantity, at Sutton and Croydon (Surrey) only ten or eleven miles off, *by land*; and at Northfleet (Kent) only twenty miles *by water*; yet it is never used as a manure. The price at which it is sold on the wharfs in London and Westminster, is too high for the farmer; as it would stand him in upwards of two guineas a cart-load, by the time he had got it home, if only ten miles from town*.

On inclosing the commons of this county, some cases will present themselves, in which lime would be necessary, and highly beneficial; as it is on all soils that are black and peaty, producing heath,

* It is sold at about nine shillings per twenty-five small bushel bags, which weigh about half a ton. A farmer's cart would hold four such parcels. The team and expences of carriage ten miles into this county, would be sixteen shillings; together, 2*l.* 12*s.*—*J. M.*

If lime be laid on with the intent of curing a defect in the soil, it would probably be useless on land in which there is a mixture of marl, chalk, or limestone; and also on the sand and gravel of marine shells, limestone, marble, or any materials which are reducible to lime; and perhaps on any clean skinned soil, producing an healthy herbage*.

Most kinds of *stone lime* should be applied with a sparing hand, and with a considerable degree of caution, as the caustic quality is many times greater in *this* than in lime made from chalk. Indeed I have had many opportunities of seeing total barrenness induced by *a too liberal use of it*. Very generally, at the several places where the carts were stopped for the men to spread it; at the bottoms of every heap; and, once, an entire close†.

Old arable land, that bears good corn, is in no want of lime; nor ought it to be applied to such a soil without being previously mixed with mould, mud, dung, &c.

Landlords would do well to restrain the general use of lime; and to give their *tenants* leave to apply it only, where its beneficial effects are proved by experiment; and then for the production of *two or three* green crops to be fed on the land, previously to taking *one* of corn. It seems to prepare the soil for yielding its treasures, and therefore, if it should be applied for a succession of corn crops, the ruin of the land is inevitable.

* "As quick-lime greedily absorbs fixed air from the atmosphere, and from the soil, by which, as soon as it is saturated, it is brought back to a mild calcarious earth or selenite, might not selenite or gypsum, without the trouble and expence of calcination, supply its place? Some affirm, from late experiments, that limestone, ground or broken down, answers equally well as a manure. And of late, gypsum, or plaster of Paris, has been extolled both at home and abroad."—*Note in the margin of a returned Report.*

† "We have had many opportunities of observing the abuse of lime: being too often repeated, and in large quantities, it becomes hurtful."—*Cumberland, quarto, page 50.*

Lime never increases the richness of any soil; but it has deteriorated much land, by promoting an over exhaustion. Yet many are the landlords who, from supposing that it *enriches* the soil, make their tenants covenant to lime the land every time they fallow it, which is generally every third year; not considering that it is a dressing mostly in favour of the *tenant*, and frequently against the interest of the *landlord**.

Limestone.—In Oxfordshire, Gloucestershire, Wilts, and other counties, the limestone consists wholly of marine matter, or sea shells, cemented together by a kind of gluten deposited from the sea. The whole bears conclusive evidence of having accumulated at the bottom of the ocean, and is a mere shell of from two to five or more feet in thickness, lying immediately under the cultivated surface. It would be curious to make an enquiry as to the number of years in which the sea could add one foot in depth, of solid matter (shells, coral, and the remains of fish) to every part of the globe covered by that element, and thence to estimate how many million of years must pass, before it, and the increase of shells in fresh water, peat bogs, &c. could accumulate so as to double the quantity of solid matter contained in the globe; and, by reversing the estimate, look to a time when it possibly was not more than half its present size.

“ *Marl* is one of the most valuable manures upon
 “ Enfield-chase, where it is found in some abundance,
 “ and is in very general use. The proportion of calca-

* “ Lime has a great effect on land newly brought into tillage, and has, in many instances, put it more in the power of tenants, with short leases, to exhaust the soil by successive corn crops, and leave it a *caput morituum*. ”
 —East Lothian, octavo, page 142-3.

After all, the fault seems to be, principally, in not growing green crops sed on, instead of corn crops carried off.—J. M.

“ rious earth it contains is considerable, but differs almost
 “ in every pit, and frequently in the same pit. Some of
 “ it, when burnt, moulders and falls into lime; whilst
 “ the contiguous or adjoining part, bears the kiln, and
 “ may be made into brick, but of so incomplete a kind,
 “ that, in general, it scales and falls to pieces when ex-
 “ posed to the air. This kind of earth differs in colour,
 “ as the quantity of clay sand, or calcarious earth, hap-
 “ pens to predominate. It is somewhat singular, that this
 “ body is, for the most part, discovered at or near the
 “ summit of the high grounds, from two to four or five
 “ feet below the surface.

“ The stratum immediately above the body, is of a
 “ bright coloured brownish clay, not effervescing with
 “ acids, and containing little or none of the calcarious
 “ earth. The stratum below this body, is most generally
 “ of a strong saponaceous blue clay, partaking nothing of
 “ the marly nature. The pits are from two to fourteen
 “ feet deep. Many curious petrifications of shells and
 “ fossils have from time to time been found in these pits,
 “ at the depth of seven or eight feet from the surface.

“ The expence of marling an acre of arable land, is
 “ generally as under, namely,

	£.	s.	d.
“ Four men, digging and filling 80 cart-loads*	}	0	16 0
“ at 4s. a score, spreading included, is			
“ One man and four horses two days, at 12s. is		1	4 0

“ Thus every expence per acre is £. 2 0 0

“ or about six-pence a load, provided the marl be upon
 “ the spot, but will vary according to the distance of the
 “ cartage. The effect of this manure upon new inclosed

* Quere—How many cubical feet does each load contain?—*J. M.*

“ grounds

For a further account of marl, see Enfield-chase.

I have not heard of there being any *shell marl* near the surface in this county; but, at the depth of many feet, a strata of four or five feet in thickness, consisting of oyster, and other marine shells, and sediment, has been dug through at Chelsea; and it most probably extends over at least all the flat part of the county. The same strata has been met with in many places in the adjoining county of Surrey. I know not whether it has been used as a manure, except indeed in such small quantities as are usually dug on the sinking of wells; nor has any one entertained an idea of raising it purely for the purpose of agriculture. However, if it should be found to answer, I do not see why this should not be done, as the springs are considerably below it, and the expence would not much exceed what is constantly incurred in various parts of Herts, for the procuring of chalk: or it might be raised in the same manner as coal, which in some places is sold as low as two shillings or half a crown a cart-load.

The blue, dense earth, found very generally in the south-west part of the county, at the depth of about eight or ten feet, has been tried by Mr. East on some of the most gravelly land near Heath-row. It slacked like lime, and, after the first year, the improvement was very conspicuous, and has continued so for several years. To the farmers of Stanwell, Heath-row, and West Bedfont, this earth is deserving of attention: it might first be tried over a very small extent; and, if found to answer, it may turn out to be a real treasure to them, and also to the first cultivators of the more gravelly parts of Hounslow-heath.

Clayey-marl—Should not be laid on a strong loam, at least not without its benefits being first clearly established by

by a sufficient number of experiments, tried for several years; as it will generally increase the wetness and tenacity of the soil.

At Vinehall, Sussex, several fields of temperate loam were marled about thirty years ago by the present tenant, (Smith), who complains, that it has done much harm, by rendering the land too tenacious, adhesive, and wet; and likewise, that it introduced *coltsfoot* into the fields; which has maintained itself ever since, in spite of any endeavour of the tenant to eradicate it.

Soot.—The soot of all the chimnies in London, and most of those in other parts of the county, is collected by the sweepers, and sold for the purpose of top-dressing corn and young clovers; though I believe more of it is used in *Hertfordshire* than in *this county*. It is usually spread at the rate of forty bushels per acre, towards the latter end of February.

Smoke.—The smoke, consisting of the lightest particles of soot, raised by the force of the ascending current of rarefied air, arising from three hundred thousand fires in London and its environs, is daily deposited on the surrounding country; the next rain washes it into the soil, and it sensibly promotes vegetation.

Peat—Is to be had in great abundance in the marshes near Uxbridge, on both sides of the canal. It is intersected here and there by beds of flinty gravel, than which there cannot be any thing more convenient for making roads across these boggy grounds. The owners of these meadows would do well to burn the peat into ashes for sale, as they might be easily conveyed to every place bordering on the canal, and on the river Thames.

The

The *Newbury ashes* can be brought by the barges to any place in this county adjoining the river Thames, above London, at two guineas and a half per hundred bushels, nine-gallon measure; (*i. e.* one guinea at the place, and one guinea and a half for the freight).

I have tried these ashes on wheat, tares, seeds, and meadows, in various quantities per acre, on my *clayey-soil*, without their producing any sensible effect.

For the effects of peat-ashes, when mixed with lime, and applied as a top-dressing to the lands in Berkshire, see the section on paring and burning.

The following notes are copied from observations made in the margins of the returned Reports:

"In my opinion, every load of hay expended on the farm will produce three large loads of dung; and every load of straw used as above will make two loads of dung."

"Coal-ashes—I have frequently tried them upon cold, wet, clayey meadows, but never found they paid the expence. Upon gravel I have known them answer well, and the Hertfordshire farmers sow great quantities of them annually, upon their clovers growing upon the hot gravels in the neighbourhood of Watford, &c."

"The Middlesex farmers, particularly in the parish of Hendon and its environs, manage their compost heaps the best in the kingdom: they make it as fine as ashes, by which means they are enabled to put it on their land at most times of the year, and the first shower of rain is sure to carry it down to the roots of the grass."—*Anonymous.*

"Where the dung is drawn by back carriage, the expence should not be estimated high; a good load of dung may be worth in London about 3s. 6d. —about fourteen loads sufficient for an acre—night-soil is sold at 5s. per load, and is reckoned to go three times as far as dung, in giving fertility to land."—*Dr. Wilkinson.*

There is a new kind of manure brought into use within these few years, viz. the soil of the necessary-houses in London, which used to be thrown into pits (particularly in Tothil-fields) and quite wasted. It is now regularly worked up with mould, and I believe sometimes with lime. This may be seen done on a large scale on the north side of the New-road, between Marybone and Paddington. Query—the kind of land, and the quantity in which it is laid on? It appears from various authors, to be the chief
"manure

"manure used from time immemorial in China, and reckoned the most forcible.

"Some notice should, I think, too, be taken of the use of soot and bones from the laystalls in London, which last is, I believe, very little known in other counties except in Hertfordshire. Woollen rags, though got in London, are, I believe, more used in Berkshire, being sent up in barges, than Middlesex."—*Sir Rich. Sutton.*

Night-soil is, in my opinion, founded on experience, the most powerful and effectual manure, quantity considered, of any now in use.—*J. M.*

SECT. IV.—WEEDING.

IN one or two parishes in this county, the weeds are destroyed by an entire summer-fallow every third year; and on the *strong loams* in the other parishes, by hoeing, and hand-weeding the drilled crops of beans and peas.

On the *sandy loams*, by hoeing the crops of peas, tares, and turnips. After the peas or tares are off, the land is ploughed and harrowed, and the *root-weeds* raked together and burnt; which is repeated after the cross-ploughing. The land being then free from *root-weeds*, turnips are sown, and the *seed-weeds* are destroyed by twice hand-hoeing. This process being repeated once in about three or four years, keeps *light* land clean.

In a dry summer, the trouble and expence of raking, picking, and burning, weeds, may frequently be saved, and the roots destroyed, by only harrowing them to the surface after every ploughing; and thereby exposing them to the sun for a sufficient length of time to kill them; which is effectually done in a week.

Wherever the vegetable mould is of a sufficient depth to admit of *trench-ploughing*, that operation, aided by a heavy rolling, will completely destroy the *root-weeds*. It is even more effectual for that purpose, than any greater number of ploughings, and is an excellent method, where it can be done without turning up a *poor sub-soil*.

SECT.

SECT. V.—WATERING.

THIS county is very well watered. There is no deficiency in *summer* for the use of *cattle*, though some parts are a little too dry for the *crops* in *that season*; and others are too much flooded in *winter*. Yet notwithstanding these extremes, *irrigation* makes no part of the practice of a *Middlesex farmer*; he suffers *the streams* to glide by, or through his farm, without interruption; and looks on them merely as conveying the surplus-water out of the county. When the *summer's heat* is burning up his crops, his only hope is in an early rain: he never thinks of supplying the deficiency of moisture by art. And when the *winter's flood* o'erspreads his fields, in some cases he bewails his misfortune, but dreams not of embanking his land. If his farm is exhausted, he resorts to the London dunghills, forgetful of the streams that are running through it, loaded with fructifying particles.

The improvement of land by irrigation, is of the very first importance. Wherever the water of this county can be flowed over, and afterwards drained off, *any kind of land*, at pleasure, be it ever so poor, it may be laid to grass; and, by the effect of water alone, raised to the highest pitch of perfection which meadow-land is susceptible of. This is not only a great improvement, worked without manure in the *first instance*, but the land will never want any, or at least not more than it will meet with in the water. The largeness of the produce of watered-meadow is, at the same time, a fund for the dressing of other land; and particularly valuable to every cow-farmer. No other mode has yet procured such early spring grass; and the hay, when mown early, is peculiarly suitable for cows, being soft and succulent.

succulent. As a *cow-pasture*, no other land would support half so much stock.

The produce of meadow-land in this county, is 10l. an acre per annum; of the arable land, in *common fields*, 8l.*; light land *inclosed* 13l. † Any of the foregoing soils would produce 15l. if watered-meadow ‖.

The importance of water, as assisting the growth of grass, may be judged of by contemplating the circumstance, that at least *three-fourths* of the weight of grass is water. This is proved by its losing *so much* on being dried into hay; as *four* tons grass make only *one* of hay. If therefore the soil be too dry to afford moisture in this proportion, the crop must, necessarily, be stunted.

“ Grass and corn, during the time of their growth,
“ absorb about one-half of their weight of water each
“ day, if the weather be favourable; and the water they
“ thus pass, nourishes them merely as water; but it con-
“ tributes still more to their nourishment, when it conveys
“ to them earthy and saline particles, as spring and river
“ waters do.”—*R. Kirwan*.

For the best method of preparing the land for being watered, see Boswell's pamphlet on water-meadows.

In *Hanworth-park*, which contains 600 acres of land, there are about 60 acres of water-meadows. I have no knowledge of there being any more in the county. *This* is less perfectly managed, than any that I remember to have seen

* Wheat	-	12
Beans	-	5
Peas	-	6

24-3=8l.

† Wheat	-	12
Peas and turnips	-	20
Barley	-	7
Clover	-	13

52-4=13l.

‖ Three crops at 1½ load, is 4½ loads, suppose at 3l. only, is	£.13	10
Other feed	-	1
Year's produce	-	£.15

else-

elsewhere; but, though laid out in an ordinary manner, the beneficial effect is very great. In the *middle of September 1796*, one close of near twenty acres of *this land* was, from six inches to a foot, deep in *after-grass of the most luxuriant growth*; when all the *unwatered* grass in the county was *nearly burnt up*. Another close of forty acres, had supported a mixed stock, of forty-seven horses and bullocks, for three months, who were all doing vastly well. On the adjoining land of similar quality, *manured but not watered*, the cut of the scythe was not grown out*.

About one-third of the land in the county is, *in point of elevation*, capable of being irrigated on as easy terms as any land whatever; the rivulets, ponds, and strong land for the making of reservoirs, *being sufficiently high for that purpose*. The Thames is but a few feet below the surface of the adjoining land; however, as it cannot be damm'd so as to turn it into water-carriers, it can therefore only be used on a very small scale, without the help of machinery. The greater part of the level, and low situations, are, unfortunately, in *common fields and com-*

* A fine stream runs through this park, capable of irrigating nine-tenths of the whole *without machinery*; and, *with a power to raise it five feet*, it might successively lay the whole under water. But this stream is applied to the use of the canals in Bushey-park and Hampton-court; and the persons employed to keep it clean, will not suffer it to be obstructed, nor diverted from its course, in the smallest degree; though much of it could be returned into the same channel, after having served the valuable purpose of irrigation. These people enter the park, and drag the rivulet at their pleasure, leaving the earth and weeds which they rake out; and, if there be only a barrow-full of it, they generally leave it in eight or ten lumps, besides trampling and destroying the crops in every direction. It is not this water which is employed in irrigating the sixty acres mentioned in the text, but the water of another stream which the estate has a right to use. These men not only do twenty times more damage than is necessary; but, what is still worse, they have the impudence to personally insult the gentleman who occupies this large farm, even while they are trespassing on his grounds, and destroying his crops. In short, he is irritated beyond description, and says that no regard is paid to a *farmer*.—*J. M.*

mon pastures; and, of course, present an insuperable bar against this, and every other improvement. The *inclosed land* too, in every part of the county, is divided and subdivided into such a great number of small estates, as to circumscribe the possibility of making flowing meadows, *without machinery*, into a very narrow compass, along *the borders of the rivers and streams*; and even *there* by no means generally, as, in *such* situations, the same obstructions would frequently be found to interrupt the conveying of water from levels sufficiently high*.

The Thames, at London, receives, daily, immense quantities of the richest materials; and, as far up the river as the tide flows, its water is almost saturated with manure. In every part of its course it contains, in a state of solution, large quantities of the most valuable parts of animal manure, and of calcarious matter, previously dissolved by the rains, and washed by the floods off the rich lands, sheep-downs, and chalk-hills of several counties, whose surplus-water united form the Thames; which still farther enriches itself as it passes along, by the waste of various towns. Being thus loaded with the *cause* of fertility, it ought, as much as possible, to be spread over *poor land* in such a manner as to allow it to filter and deposit its rich contents. This can only be done, to any considerable extent, by inclosing the commons; by providing for irrigation during the division; and by calling in the aid of machinery.

The water of every flood, but especially of the first in autumn, is thickened with the washings of manufactures, of farm-yards, of dunghills, of marl, chalk, and of animal and vegetable matter collected from all the lands on which the rain

* A note says, that "along the sides of all the rivers and streams which abound in the county, there are flat grounds sufficiently low to be flowed, at least during every winter, and other times of flood."

fell which caused the flood. Such an abundance of rich, floating matter, cannot fail of being highly beneficial to every description of land over which it is possible to throw it in such a manner as to deposit its contents. But of all the waters that ever were used for the fructifying of land, the highly putrid seems to claim the first attention. The ponds, for instance, in which hemp and flax have been rated, powerfully promote vegetation; as has been experienced in Somersetshire (see the Report of that county), since I gave the original hint of its probable value on being showered over grass-land, in the Annals of Agriculture, volume 18. Of course, a cheap and ready method of rendering any considerable pond highly putrid, for the purpose of irrigation, would be a valuable acquisition to the agricultural world.

The higher grounds of this county, on account of the tenacity of their nature, are particularly adapted for the waters running into the lower ground, between the hills; where dams should be set up, in order to form a number of large ponds that might be employed in irrigating the lands below. Every stream should be stopped, by as many dams as might be necessary, to enable the farmer to turn the surplus-water over his grounds.

On such parts as are too flat to admit of this method of making ponds, they should be made by excavating the grounds, in situations the most suitable, for the double purpose of collecting the water, and of admitting of its being returned over the land. Every pond that can be made by the damming of a stream, would collect large quantities of mud, always fit for immediate application on *arable* land, without any thing else being mixed with it; or on *grass*, after being mixed and turned up with dung. Of such great use are ponds, as collectors of mud, that some excellent farmers have

have a small one at the lowest corner of every close, for the water to deposit the grosser parts of its rich sediment in.

There are many ponds in this county already; and in general they are situated on high ground, between the sloping sides of two opposing hills. Such, for instance, are those at Hampstead, at Canons, and near each of the four lodges on Enfield-chase; at Beach-hill, and Trent-place; and on the common west of Elstree: in short, there are ponds on *most* of the high grounds in the county, and there might be such on *all*, which could be made extensive reservoirs. The surplus-water of every one of them might be employed in flowing some adjoining land, without machinery.

There is a very great quantity of land in Britain, now in a state of nature, which is capable of being drained and watered in the manner of water-meadows; and the various Reports afford ample proof, that it is not always more necessary to re-shape the ground and burn the rubbish, than to bring the water on in proper quantity, and keep it in a small degree of motion till filtered and drained off again. This, being continued for a moderate length of time, so alters the nature of the soil, as to destroy the coarse grass, hassocks, rushes, reeds, heath, furze, and other equally worthless produce, which are gradually succeeded by rich grass in the greatest abundance, equal to the production of the most luxuriant soils*.

Most small streams on the sides of slopes may easily be dammed sufficiently to turn them over the adjoining ground; and so may many considerable rivulets, where one person only owns the land on both sides to a considerable extent, as is the case on some large estates. But even

* See Dr. Anderson's very valuable Report of Aberdeenshire, quarto, p. 167, &c. and Dumbarton Report, quarto, p. 30.

should the owner of a few hundred acres, which are bounded by a rivulet, have the good fortune not to be hindered in this matter by a mill, he will have to encounter a hundred other difficulties from his neighbours, who are not convinced of the superior value of his enterprize. Some, perhaps, have a short lease; most are tenants at will, and their landlords will not be at the expence of preparing the ground. Damming the water to the brink, without a previous preparation of the neighbouring grounds, would be injurious to them. One, or all, of these objections, would be more than the most spirited exertions could overcome. *Owing to these difficulties, some of which are not of a remediable nature, not one acre in an hundred that would admit of it, can be watered without machinery.*

A power effectual and cheap, for the raising of water in sufficient quantity to flow about ten acres at a time, would be invaluable*; as nearly all the landed estates in Britain might be wonderfully improved by it. Should the power be acquired, be it to work by horses, wind, water, or steam, innumerable are the uses to which it might be applied. The most obvious, to a farm, are thrashing, winnowing, cutting chaff, raising water for the use of the family and of the cattle, the grinding of malt, lintseed, and corn; but, above all, the raising of water for irrigation.

Forty acres of good water-meadow will support, in the greatest luxuriance, 500 Wiltshire ewes and lambs for six weeks, from the middle of March to the 1st of May, during which time they will improve one shilling a week, or pay *three pounds fifteen shillings* per acre, at a time of

* Mr. Boys mentions a wind-pump erected near Deal, at the expence of only thirty guineas, which raises 1600 butts in twenty-four hours. This would probably water two acres at once; and possibly, for 100 guineas, the same person could erect machinery to irrigate ten acres at a time.—*J. M.*

year when all other farmers are distressed from a want of food for their stock. In Middlesex, it would still be more valuable, as five pounds worth of hay might be mown off it the first week in May.

The best water-meadow is probably the mark of perfection in the management of a farm. It follows, of course, that every possible exertion of labour, art, and machinery, should be employed to flow as much land as possible.

CHAPTER XIII.

LIVE STOCK.

IN a country like this, where animal food forms so considerable a part of the sustenance of its inhabitants, and where horses are of so much consequence in every department of business, no subject can well be of more general importance, or more worthy of attention, than that of live stock.

Before I proceed more minutely to discuss this important branch of the rural art, I would premise a few observations, namely, that whoever means to attempt any considerable improvement of his live stock, should, first of all, be sure to have a proper degree of shelter, shade and warmth; and in the next place, *if his land be not already of the richest quality, he should set about bringing it to that degree of perfection*; at least, he must drain it completely, and, if possible, make water-meadows, raising the whole to the highest degree of cultivation of which it is capable; *as the live stock will in some measure keep pace with the improved state of the land.*

Both reason and experience prove, that vegetables and animals are, in some degree, proportioned to the quality of the land on which they are grown, or reared.

Rich land naturally produces a luxuriant herbage, and such rich food will certainly raise large animals: on the contrary, dwarf plants are generally met with on a poor soil, and the poverty of such food as certainly produces stunted animals. To prove this, let any one disposed to try the experiment,
take

take twin lambs at the birth; let him rear one in the poorest manner, and the other in the richest; he will then find that the latter has grown to two or three times the weight of the former in the same space of time.

One of the certain consequences resulting from a general inclosure, and improved husbandry, would be a more plentiful supply of nutritious diet for all kinds of animal stock; and the size of the various breeds of cattle and sheep, would certainly increase proportionally to the quantity and quality of the vegetables on which they feed. A more powerful argument in favour of a general inclosure cannot perhaps be found.

With respect to the choice of stock, at least in regard to size, the farmer should keep in view the nature and quality of the soil; as live stock of every kind, and of all the various breeds, should, in point of size, be proportioned to the quantity and quality of their intended food. *The richest grazing land, and the most nourishing artificial food, will certainly pay more in feeding large bullocks, sheep, and swine, than it would do in feeding the smaller sizes of the same species; and it is equally obvious, that the smaller breeds will answer better on poor pasture than the larger.*

The preference to be given to any particular breed, of every species of live stock, should be determined by the principal object the breeder has in view. If it be to possess a stock that is disposed to become more early fat with a smaller quantity of food, than another breed, the chief thing to be done to attain this object, will be, to procure a male and female possessing such quality in an higher degree of perfection than others of their species. Their offspring will certainly possess the quality of their parents, and should not by any means be crossed with any other breed but such as have the said qualities, if not in a superior, at least in an equal degree with themselves. And it is worthy of

attention, that a wild or unsettled disposition in any animal, is a certain drawback on its powers of feeding; as, on the other hand, a quiet, easy-tempered, docile nature, pre-disposes such animal to the accumulation of fat.

If quantity of milk be the object to be attained, such a cow as is mentioned in the Report of Lancashire, p. 151*, should by all means be procured. Neither labour nor expence should be spared, to discover the bull from whom she sprung, for they would together be worth almost any money. By invariably breeding in the same family, or blood, a great acquisition would be made, *as all their offspring would undoubtedly partake of the qualities for which their parents are estimable.* After having once procured the best milkers, it would be absurd to admit a cross from any other breed, unless they should have the same perfections in at least an equal degree; as crossing the breed with one that gives less milk than your own, must inevitably defeat the intended object.

The same observations apply with equal force to every other species of live stock; it is therefore unnecessary to repeat them.

The quantity of live stock on the farms of this county is much less, in proportion to the number of acres, than perhaps in any other. This is certainly owing to the produce of the land fetching much more, and being disposed of with greater advantage at market, than if given to cattle at home.

* This cow gave twenty-two quarts in one day, and her milk in one week yielded eighteen pounds of butter, sixteen ounces to the pound.—J. M.

SECT. I.—CATTLE.

Neat Cattle.—This county is not distinguished by any particular breed of neat cattle, as belonging peculiarly to itself; for most of the calves bred here are suckled till about ten weeks old, and then sold to the butchers, for the supply of the London and other markets, in the article of veal.

In the pleasure-grounds of gentlemen, the Suffolk, Alderney, Jersey, Guernsey, Welsh, and Scotch breeds, are mostly to be met with. The Holderness short-horned breed are almost the only sort kept by cow-keepers for the produce of milk for sale. The farmers in the more distant parts of the county have a mixed breed, consisting of all the foregoing kinds, which are employed by them in *suckling*. This practice is well known to be more profitable than grazing, and less so than the dairy. The latter is pretty nearly excluded from the domestic economy of the farm-houses in this county, as the farmers' wives, for the most part, have neither inclination, industry, nor skill, sufficient for the management of a dairy; and in suckling, the business is performed by men, as the women (even the servants) will not go into a dirty cow-house, and submit to the drudgery of milking, and attending the calves.

The wash of malt distilleries, which had for a considerable time been solely used for the purpose of fattening hogs, has of late years been applied to the fattening of oxen on a very extensive scale, both in this county and in Surrey*. Mr. Liptrap, of Whitechapel, has fattened many beasts in this manner; and at a single house in Bat-

* This practice was probably copied from the cow-keepers, who had, for ten or fifteen years, bought the said wash for the purpose of feeding off their dry cows.—*J. M.*

tersea (Surrey), stalls have been erected to accommodate 500 at a time. They have a little hay or straw given them once a day, to enable them to chew the cud ; they both stand and lie on a framing (a kind of trellis) of wood-work, raised a little above the pavement, and are not allowed straw, or any substitute for it, for bedding. This beneficial practice is extending itself very much, and is, as well as the feeding of hogs by the same means, a very considerable improvement, and must be of great advantage to the community.

Mr. Foot, in his Report of this county, says, that “ Mr. Allen, of Philpot-bridge, fattens oxen of the Worcestershire breed with oil-cake, &c. and generally gets them to so high a pitch of perfection, as to sell them for 40l. an ox.” He further observes, that “ farmers near London, who have fat cattle to send to market, have great advantages ; they can, if cattle are wanted, send them to Smithfield at a short notice ; and if at any time they are not sold, they can return to their pasture, and not be much the worse for their journey. The distance being so small, they may frequently sell them to the London butchers on their own farms, and by so doing save both time and expence.”

Cows.—The cows kept for the purpose of supplying the metropolis with milk, are of a large size, and known by the name of Holderness cattle (from the district of that name, in East Yorkshire), though they do not now all come from thence, but from the most perfect breeds of this stock in Yorkshire, and the neighbouring counties.

The dealers in these cattle buy them of the breeders when they are three or four years old, and in calf. They expose them to sale at the fairs and markets in this county ; particularly at Islington, where there is a fresh supply from

from the country every Thursday morning, by means of which the London cow-keepers are enabled to keep up their several stocks.

Many cows are likewise bought in the aforesaid counties, in lots of ten or twenty, by private commission, and forwarded to the cow-keepers in and about London. The prices given for them have generally been from ten to fifteen guineas. Though, for the last two or three years, the price has increased to sixteen or eighteen, and is now (February 1798) twenty, or more.

The Holderness breed is supposed to give the largest quantity of milk, and, for that reason, is preferred by the cow-keepers, as quantity, independent of quality, is their object.

“ This breed of cattle were, most probably, first brought
 “ from Normandy, where they are the common cattle of
 “ that country. The late Sir William St. Quintin took
 “ great pains to cultivate this breed. He had bulls brought
 “ from Normandy to his estate at Lowthorpe, and there-
 “ by much improved the breed of short-horned cattle, as
 “ he not only gave the use of them up to his own tenants,
 “ but to the public in general.

“ The calves from large cows grow too fast to get
 “ soon fat, and are, besides, coarse in the grain of the
 “ meat. The smaller sized cows bring calves that are
 “ much more esteemed both by the butcher and his cus-
 “ tomers, for smallness of joints, fineness of grain, and
 “ delicacy of taste, &c.”

A correspondent observes, that this breed has a greater proportion of lean meat in any given weight of beef, than any other with which he is acquainted. There is also less waste of fat, and it, therefore, goes farther in most families.

Mr. Baird says, “ that round Hackney, Islington,
 “ Paddington, and several miles thereabouts, the cow-
 “ keepers

“ keepers engross every inch of land they can procure.
 “ Some of these men have remarkable large stocks of
 “ cows. One of them (Mr. West, of Islington), has,
 “ on different farms which he possesses in that neighbour-
 “ hood, very near eight hundred*.”

“ The cow-keepers breed very few cattle, and those
 “ only from favourite cows (which become so merely
 “ from their giving much milk), and with very little at-
 “ tention to the choice of their bulls. Even in summer,
 “ and when the grass is in the greatest plenty, the cows
 “ are regularly fed with grains, which, though the quan-
 “ tity of milk is thereby increased, by no means add to
 “ its quality.” The general allowance is forty-five quar-
 “ ters of grains per week (at 1s. 10d. per quarter) to every
 “ twenty-five cows. They are given them twice a day,
 “ and they have, besides, two meals of turnips and hay.
 “ Some cow-keepers have tried salt mixed with the grains,
 “ more with a view to preserve the grains longer in a
 “ sound state, than from any consideration as to the
 “ health of their stock, or the improvement of the quality
 “ of the milk. It is acknowledged that the cows eat the
 “ grains so mixed with great avidity; but the proprietors
 “ not getting an adequate return for their trouble and ex-
 “ pence, I do not find that it is now much practised.

“ The number of cows (says Mr. Foot) kept by the
 “ London cow-keepers, in the county of Middlesex,
 “ amounts to nearly 7200; and in the counties of Kent
 “ and Surrey to 1300. I have taken great pains to ascer-
 “ tain these numbers with as much precision as the na-
 “ ture of the subject is capable of; and having collected
 “ my information from the following places, I have great
 “ confidence in the account being accurate,

* Eight hundred cows, producing nearly 30 L. each, is 24,000 L. a year.—
 J. M.

" MIDDLESEX.	
" Tothill-fields -	} 205
" Knightsbridge	
" Edgware-road -	550
" Paddington -	}
" Tottenham-court-road -	
" Battle-bridge -	} 3950
" Gray's-inn-lane	
" Bagnigge-wells	}
" Islington -	
" Hoxton - - -	150
" Ratcliff - - -	205
" Mile-end - - -	406
" Linnehouse - -	180
" Poplar - - -	70
" Bethnal-green -	200
" Hackney - - -	600
" Bromley - - -	160
" Bow - - - -	100
" Shoreditch -	} 200
" Kingsland -	
" Odd cows - -	224
7200	

Brought forward 7200

" KENT.	
" Deptford - -	} 681
" Rotherhithe -	
" Greenland-dock	
" New-cross -	
" Bermondsey -	}

" SURREY.	
" Lambeth - -	} 619
" South Lambeth	
" Kennington- bridge - - -	
" Coldharbour -	
" Peckham - -	}
" Peckham-rye -	
" Newington -	
" Camberwell -	
" Total - -	8500

" During the night the cows are confined in stalls.
 " About three o'clock in the morning each has an half-
 " bushel basket of grains. From four o'clock to half
 " past six they are milked by the (retail) milk-dealers,
 " who contract with the cow-keepers for the milk of a
 " certain number of cows, from sixteen to eighteen-pence
 " for

“ for eight quarts*. When the milking is finished, a
 “ bushel basket of turnips is given to each cow; and
 “ very soon afterwards they have an allotment, in the
 “ proportion of one truss to ten cows, of the most grassy
 “ and soft meadow-hay which had been the most early
 “ mown, and cured of the greenest colour. These several
 “ feedings are generally made before eight o'clock in
 “ the morning, at which time the cows are turned into
 “ the cow-yard†. About twelve o'clock they are again
 “ confined to their stalls, and served with the same quantity
 “ of grains as they had in the morning. About half
 “ past one o'clock in the afternoon, the milking commences
 “ in the manner as before described, and continues
 “ till near three, when the cows are again served with
 “ the same quantity of turnips, and, about an hour afterwards,
 “ with the same distribution of hay as before described.

“ This mode of feeding generally continues during the
 “ turnip season, which is from the month of September
 “ to the month of May. During the other months in the
 “ year they are fed with grains, cabbages, tares, and the
 “ foregoing proportion of rowen, or second cut meadow-hay,
 “ and are continued to be fed and milked with the same
 “ regularity as before described, until they are turned out to
 “ grass, when they continue in the field all night; and even
 “ during this season they are frequently fed with grains, which
 “ are kept sweet and eatable for a considerable length of time,
 “ by being buried in pits made for that purpose. There are about ten bulls to a

* The price varies with the distance, as, close to the town eighteen-pence, at a mile or a mile and an half seventeen-pence; two or three miles, sixteen-pence.—*J. M.*

† The ground-work of cow-yards ought to be made of lime-rubbish, chalk, &c. which makes a sound bottom, prevents the cows from poaching the yard, and is easily scraped, and kept clean.—*J. M.*

“ stock

" stock of three hundred cows. The calves are generally
 " sent to Smithfield market at one, two, or three days old.
 " Good milkers are kept four, five, six, and sometimes
 " even seven years, and are then dried, and fattened by the
 " same kind of food as was given to them while they gave
 " milk, and are then sold off to the butcher *."

PRODUCE OF COWS, AND CONSUMPTION OF MILK.

From the facts adduced in the preceding article, it appears that there are about 8500 milch cows kept for the purpose of supplying the metropolis and its environs with milk, and, according to the information received, the quantity given by each cow, on an average, is *nine quarts* a day, equal to, per annum, 3285 quarts.

The calf takes part of the milk for the first two or three days, during which time it would not be saleable; and there is a falling off for a few days before the cow calves: these occasion a deduction of about eighty-five quarts, leaving the annual saleable produce of each cow 3200 quarts, which, at the medium price of seventeen-pence for eight quarts, amounts to - £. 28 6 8
 To which sum add for a calf, at two or three
 days old, from 20s. to 30s. the medium is } 1 3 4
 about - - - - - }

and it gives the total annual produce per cow £. 29 10 0

which, on 8500 cows, amounts to 250,750l. per annum.

* I remember hearing a cow-keeper say about the year 1780, that he gave lintseed jelly and distillers' wash (as before remarked), as part of the diet of his fattening cows.—J. M.

EXPENCE OF THEIR FEED.

The cow-keepers feed their cattle very high, in order to their producing the greatest possible quantity of milk. The expence is nearly as follows :

	£.	s.	d.
Turnips, 14 bushels per week each cow, } at 2½d. per bushel, is - - - }	0	2	11
Grains, 7 do. at 2½d. per bushel - - -	0	1	7½
Hay, 1 truss, at 4-10ths per do. at rs.9d. per truss	0	2	5½*
	0	6	11½
Et cæteras - - - -	0	0	0½

The expence of keeping a cow one week, is £.0 7 0 and per annum 18l. 4s. which, taken from 29l. 10s. (the produce, as before stated), leaves 11l. 4s. for interest of stock, losses in cattle, the hire or support of horses and waggons, rent of buildings, attendance, and profit†.

The

* This may perhaps be deemed a low price to put the hay at, but it will not appear to be so, if we take into the account, that the cow-keepers mow their land two or three times in a season ; as their object is to procure the most grassy and soft hay they can. Hay of this kind would scarcely be saleable at market.—*J. M.*

† The late Mr. Harper, of Bankhall, near Liverpool, made the following remark on the produce of a cow, and the expence of keeping her.—“ I have been informed by an industrious cow-keeper in Liverpool, that his cows average nine quarts of milk per day all the year through, which is sold at two-pence per quart, with the advantage of selling cream. But then, he says, there is a discount to be made : as, when the summer months come in, there is often a great flow of milk comes out of the country, which reduces the average of both milk and cream, to two-pence per quart the year through.

“ To 3235 quarts of milk, at two-pence per quart, - - £. 27 7 6
 “ To the average keep of a cow in grains, &c. for } £. s. d.
 “ one year, at 4s. 6d. per week, - - } 11 14 0
 “ To 160 stone of hay, at eight-pence per stone, - 5 6 8
 “ To 16 weeks grass, at 3s. 6d. per week, - - 2 16 8

together - - 19 16 8

remains - £. 7 10 10

“ for interest of stock, losses in cattle, and profit.”

By

The consumers pay three-pence halfpenny per quart to the retailers. If the latter were to sell the milk pure and unadulterated at this price, it would yield them a profit of 64l. 14s. per cent. But, in order to discover the actual profit of the retailers, we must add six-pence for short measure, and the extraneous articles mixed with it, which increases 2s. 4d. the usual price of eight quarts, to 2s. 10d.; and, as it costs them only 1s. 5d. there remains for labour and profit 100 per cent. Thus the retailer clears 28l. 6s. 8d. by every cow. On the whole, they divide among them the unreasonably large sum of 240,833l.; and the sum paid for milk amounts to 481,666l.

When the families of fashion are in London for the winter season, the consumption, and consequent deterioration, of milk, are at the highest. During the summer months, when such families are for the most part in the country, the milk may probably be of rather a better quality. The cream is taken from so much of it as remains unsold, and made into fresh butter for the London markets. The butter-milk is given to the hogs.

The milk is always given in its genuine state to the retail dealers; and, as it is sold to them by the cow-keepers after the rate of two-pence and 1-8th of a penny per quart, and is retailed by them at three-pence halfpenny per quart, the profit is surely so large as ought to prevent even the smallest adulteration. But when it is considered how greatly it is reduced *by water*, and impregnated with *varse* ingredients, it is much to be lamented that no method has yet been devised, to put a stop to the many

By this account it appears, that the difference in the profit of a cow at Liverpool or London, is not greater than might be expected. The account states the produce at nine quarts per day all the year round; and I think the produce in London will at least be as high as in Liverpool.—*J. M.*

scandalous

scandalous frauds and impositions in general practice with regard to this very necessary article of human sustenance.

It is certainly an object well deserving the particular consideration of the legislature. It cannot be doubted, that many persons would be glad to make some addition to the price now paid for it (high as that price is), provided they could, for such increased price, procure so useful an article in domestic economy perfectly genuine*.

Five or six men only are employed in attending near three hundred cows. As one woman cannot milk more than eight or nine cows twice a day, that part of the business would necessarily be attended with considerable expence to the cow-keeper, were it not that the retailer, as before observed, agrees for the produce of a certain number of cows, and takes the labour and expence of milking on himself.

Every cow-house is provided with a milk-room (where the milk is measured, and served out by the cow-keeper),

* " Not satisfied with the profit here stated, which, considering the difference of measure, is above 100 per cent. it is a common practice with the retailers of this useful article to carry the milk first home to their own houses, where it is set up for half a day, when the cream is taken from it, at least all that comes up in that time, and it is then sold for new milk. By which means, what is delivered in the morning is no other than the milk of the preceding afternoon, deprived of the cream it throws up by standing during that time. By this means a farther considerable profit accrues to the retailer, and the milk is greatly reduced in point of strength and quality. This cream, poor as it is, they again mix with flour, chalk, and perhaps other more baneful ingredients, and yet it finds a ready market in the metropolis. It is a matter of surprize, that in the city of London, so long and deservedly famous for the attention and vigilance of its magistrates, in the conduct and regulation of the markets, no notice has hitherto been taken of, or any means adopted to prevent, the abuses so generally and justly complained of in an article, the consumption of which, in London and its environs, is greater than in half the cities of Europe. Milk has always been a favourite part of the food of Britons. And in a great and populous city, it is highly conducive to the health of its inhabitants.—*Lacte et carne vivunt*—says Cæsar in his Commentaries."—*Mr. Baird.*

and

and this room is mostly furnished with a pump, to which the retail dealers apply in rotation; not secretly but openly, before any person that may be standing by; from which they pump water into the milk vessels at their discretion. The pump is placed there expressly for that purpose, and indeed is very seldom used for any other. A considerable cow-keeper in Surrey has a pump of this kind, which goes by the name of the *famous black cow* (from the circumstance of its being painted black), and is said to yield more than all the rest put together.

Where such a pump is not provided for them, things are much worse; for in that case the retailers are not even careful to use *clean* water. Some of them have been seen to dip their pails in a common horse trough. And, what is still more disgusting, though equally true, one cow-house happens to stand close to the edge of a stream, into which runs much of the dung, and most of the urine, of the cows; and even in this stream, so foully impregnated, they have been observed to dip their milk-pails.

A cow-keeper informs me, that the retail milk-dealers are, for the most part, the refuse of other employments; possessing neither character, decency of manners, nor cleanliness.

No person could possibly drink of the milk, were they fully acquainted with the filthy manners of these dealers in it.

The same person suggests, *as a remedy for these abuses, that it would be highly proper for every retail milk-dealer to be obliged to take out an annual license from the magistrates: which license should be granted only to such as could produce a certificate of good conduct, signed by the cow-keeper, and a certain number of their customers; and also on their being sworn to sell the milk pure and unadulterated.*

Butter.—There is not, perhaps, a county in the kingdom, where a *smaller quantity* of this article is made, and certainly not any, where a *greater quantity* is consumed, than in Middlesex.

As the farmers of this county employ their cows, for the most part, in suckling, the very small quantity of butter they make is principally for their own consumption; and what is made at the dairies of noblemen and gentlemen is, of course, intended solely for the use of their respective families: so that the astonishing consumption of this article in the metropolis and its environs, is almost entirely supplied from those counties where the dairy is more the object of the farmer; and from the sister kingdom*.

The largest proportion of butter used in London is brought from Ireland, Yorkshire, and Dorsetshire; the rest from Cambridgeshire, Norfolk, Essex, &c.

Of these several varieties, that which comes from the neighbourhood of Epping, and usually called Epping butter, is in the highest esteem; and next to that, fresh butter, which is sent to London in baskets, called flats, principally from Norfolk and Essex: a little indeed from all the neighbouring counties. This is only very lightly salted; just sufficient to preserve the flavour of it for a few days, and is very much used in the houses of the better sort of people. Of salt butter, or what is put down in tubs, the best is what is called Cambridge; but which is brought not only from Cambridgeshire, but from the

* In Middlesex, the dairy has given place to suckling, and even in more distant places it seems to be losing ground. It makes way for grazing on the more fertile lands; and for the plough on dry crumbly loams. This is the necessary consequence of the present mode of educating young women who are to be farmers' wives, which entirely disqualifies them for going through the labour and attention necessary to the well-managing of a dairy: nor can servants always be procured on whom the farmer can depend for this branch of business. I found this to be particularly the case in Suffolk; and Mr. Davis intimates the same thing in his Report of Wilts.—*J. M.*

marshes of Norfolk, &c. and is generally of a good quality, except in very hot weather, or by some mismanagement in the dairy. It is sometimes very indifferent. This is usually sent to town every week, in firkins or half firkins, and being rather more salted than what is called fresh butter, is very relishing, and pretty much used at the tables of the middling orders of people.

The next in point of quality, is what is called Dorsetshire butter, which is for the most part of a clear uniform colour, and is well made. The York butter is nearly, if not quite, as good as the Dorset, and bears nearly the same price.

Irish butter is in the lowest estimation, as it is almost always heavily salted, and very frequently tastes smoaky, fishy, and tallowy; though sometimes (perhaps one tub in fifty) it is very good.

These three last sorts are mostly consumed by the paupers in the work-houses, &c. and by the servants of the lower order of tradesmen; as the common labourers, even the very lowest classes, will scarcely buy any but the best.

As the manufacturing this article is so limited in this county, that almost the whole consumption is supplied from elsewhere, I shall refer the reader to the Reports of such counties for information, as to the minutiae of the business, and the various methods in use among the different dairy-women in those districts, where, no doubt, he will meet with ample information as to all these particulars. I shall, however, just state a few general observations which occur to me on the subject.

In the first place, I think it absolutely necessary, in order to procure good and sweet butter, that all the different vessels made use of in the process should be daily scalded; the next, that the butter-milk should be completely separated from the butter; and that the quantity of salt to be

made use of, should be entirely proportioned to the length of time it is intended to be kept*. In case the milk should have acquired any unpleasant taste, from any thing the cows may have fed on, this may be corrected by mixing a small quantity of nitre in the milk.

Every dairy, whether appropriated to the making of cheese or butter, should be furnished with a thermometer, and the dairy kept, as near as may be, of an equal temperature of air. To this if cleanliness be added (an indispensable quality), and a proper attention paid to separating the butter from the butter-milk, there cannot be much doubt but the butter will be good.

An opinion I believe pretty generally prevails in London, that the dealers adulterate the butter (by mixing with it hog's-lard and other ingredients) after it comes into their hands. This is certainly an unwarranted suspicion, which has no foundation in fact. It is well known, that butter in general is so various in its shades of colour, as that no two sorts could be so intimately mixed as to elude detection; and as to their mixing hog's-lard, &c. with butter, it is evident that, at the price that article now fetches, it would not pay for the labour and expence of doing it. Besides, the dealers constantly keep the fresh butter in the very flats or baskets in which it is brought to London, and only take it from thence as it is wanted; so that their customers have an opportunity of observing the state of it, as it comes into their hands, which is of itself a sufficient refutation of the charge above alluded to.

* When butter is found to be too salt (as Irish butter very frequently is), it may be deprived of this superabundant quantity of salt by washing it repeatedly in clear water, and kneading it with the hands. Thus, if well-made butter was, in the first instance, sufficiently salted, it might be exported from this country to Russia; and when arrived there, converted into good fresh butter by the simple operation just mentioned.—*J. M.*

The variegated colour sometimes to be observed in butter, and which may perhaps in a great measure cause the suspicion of its being mixed with some extraneous matter, arises, for the most part, from the want of due care and attention in the dairy-maid, who has not in that case completely divested the butter of the butter-milk. It is sometimes to be observed, that in one tub the butter will be in layers of two or three different shades of colour, which it is well known arises from its being composed of so many separate churnings.

The following account of the mode of making butter in Holland, is copied from a manuscript sent to the Board by Mr. R. Pole Carew :

“ The method of making butter in Holland is this—
 “ having milked the cow, the milk is not put into the
 “ pans till the milk is quite cold ; it is then stirred two or
 “ three times a day, with a wooden spoon, to prevent the
 “ cream from separating from the milk ; and if it can be
 “ stirred till the spoon will almost stand in it, they deem
 “ it so much the better. When it is found to be suffi-
 “ ciently thick, it is put into the churn and beat for an
 “ hour. When the butter begins to form, a pint, or
 “ more, of cold water, according to the quantity of the
 “ milk, is poured in, to separate the butter from the
 “ butter-milk. When the butter is taken out of the
 “ churn, it is washed and kneaded till the last water is
 “ perfectly clear and free from milk. By this method, a
 “ greater quantity of butter is made from an equal quan-
 “ tity of milk ; and the butter is more firm and sweet,
 “ and will keep longer, than that which is made by the
 “ method commonly in use in England ; and the butter-
 “ milk which remains is thought preferable.”

Animals not Natives of Great Britain.—Mr. Baird observes, in his Report of this county—“ The variety of

“ birds and beasts to be met with at Earl’s-court (the
 “ villa of the celebrated and much-lamented Mr. John
 “ Hunter) is matter of great entertainment. In the same
 “ ground you are surprized to find so many living ani-
 “ mals, in one herd, from the most opposite parts of the
 “ habitable globe. Buffaloes*, rams, and sheep from
 “ Turkey, and a shawl goat from the East-Indies, are
 “ among the most remarkable of those that meet the eye;
 “ and as they feed together in the greatest harmony, it is
 “ natural to enquire, what means are taken to make them
 “ so familiar, and well acquainted with each other. Mr.
 “ Hunter told me, that when he has a stranger to intro-
 “ duce, he does it by ordering the whole herd to be taken
 “ to a strange place, either a field, an empty stable, or
 “ or any other large out-house, with which they are all
 “ alike unaccustomed. The strangeness of the place so
 “ totally engages their attention, as to prevent them from
 “ running at, and fighting with the new-comer, as they
 “ most probably would do in their own field (in regard
 “ to which, they entertain very high notions of their ex-
 “ clusive right of property), and here they are confined
 “ for some hours, till they appear reconciled to the
 “ stranger, who is then turned out with his new friends,
 “ and is generally afterwards well treated. The shawl
 “ goat was not, however, so easily reconciled to his fu-
 “ ture companions: he attacked them, instead of waiting

* “ The American buffalo, from the banks of the Ohio, is not only
 “ much stronger than the American ox, but also steps much quicker, and
 “ the beef is much superior, as appears from a letter from my learned cor-
 “ respondent Judge Turner, which I lately communicated to our Bath and
 “ West of England Society; an extract from which will probably appear in
 “ our next volume.

“ Might not these powerful animals, imported from America when young,
 “ and trained to the yoke or draught, prove not only superior, but far more
 “ economical than horses?”—*Note copied from one of the returned Reports.*

“ to be attacked; fought several battles, and at present
 “ appears master of the field.

“ It is from the *down* that grows under the coarse hair
 “ of this species of goat, that the fine India shawls are
 “ manufactured. This beautiful as well as useful animal,
 “ was brought over only last June from Bombay, in the
 “ Duke of Montrose Indiaman, Captain Dorin. The
 “ female unfortunately died. It was very obligingly pre-
 “ sented by the Directors to Sir John Sinckair, the Pre-
 “ sident of the British Wool Society. It is proposed,
 “ under Mr. Hunter’s care, to try some experiment with
 “ it in England, by crossing it with other breeds of the
 “ goat species, before it is sent to the north*.

“ Mr. Hunter has built his stables half under ground;
 “ also vaults, in which he keeps his cows, buffaloes and
 “ hogs. Such buildings, more especially the arched byres,
 “ or cow-houses, retain a more equal temperature at all
 “ times, in regard both to heat and cold, and consequently
 “ are cooler in summer and warmer in winter; and in
 “ situations where ground is so valuable as in the neigh-
 “ bourhood of London, are an excellent contrivance. Mr.
 “ Hunter has his hay-yard over his buffaloes’ stables.—
 “ The expence of vaulting does not exceed that of build-
 “ ing and roofing common cow-houses; and the vaults
 “ have this essential advantage or preference, that they re-
 “ quire no repairs.”

* “ Extract of a letter from Bombay, to the Directors, respecting the
 goat, transmitted by Mr. Dominicus, of the India-house, to Sir John
 Sinclair:—“ Your servants at Bussora, contrary to their expectations,
 “ have lately procured and sent to this presidency (Bombay) two animals
 “ that produce the shawl wool. They advise us they are of the best colour,
 “ and tolerably hardy. The wool which grows on different parts of their
 “ bodies, under very long hair, is obtained by gently combing them.” A
 “ South America she-goat, it is supposed, is already with kid by him, at
 Mr. Hunter’s.”—*P. Forst’s Report.*

“ Mr. Hunter has caused his buffaloes to be trained to
“ work in a cart ; at first, they were restive, and would
“ even lie down ; but now they are steady, and so tracta-
“ ble, that they are driven through the streets of London
“ in the loaded cart. These animals do not draw greater
“ loads than oxen of the same size and weight.

“ This gentleman has at present a very beautiful little
“ cow, from a buffalo and an Alderney. This animal in
“ some measure is kept for her beauty ; and what adds to
“ it, she is always plump and fat, whether in summer or
“ in winter, and upon much less food than would be suf-
“ ficient to support a beast of the same size, of the ordi-
“ nary breed. I do not find that she exceeds in quantity
“ of milk, but the quality is very good ; and it is certain
“ that she could be fattened at much less expence than
“ any ordinary cow of the same size and weight.”

“ Among the experiments now going forward in Mid-
“ dlesex, one of the most important undoubtedly, is a
“ cross that has been tried between a Spanish ram and two
“ Shetland ewes : four lambs have been already produced
“ from this mixture. The Spanish breed, it is well
“ known, is distinguished for the fineness of its pile, and
“ the Shetland for its softness and colour. If these quali-
“ ties were united (which, so far as can be judged from
“ the experiment above mentioned, is likely to be the
“ case), the article of wool would be brought to its highest
“ state of perfection.”

SECT. II.—SHEEP.

THERE is not any particular breed of sheep distinguished from the rest, as exclusively belonging to the county. Indeed the farmers of Middlesex employ their land more profitably, than could be done by breeding and rearing sheep to any greater age than to be slaughtered either as house or grass lambs.

In some of the inclosures of men of fortune, may be found specimens of sheep of various foreign breeds, mixed with several of this country. This mixture is merely an object of curiosity; and, from the variety it gives, affords pleasure to the owners, but is by no means fit for the imitation of a farmer.

The grounds of Mr. Robinson, the surveyor-general, are in part stocked with the shorter bodied Scotch sheep, which at a distance have the appearance of those of the South-down, but are inferior to them in the essential properties of fine wool, and quietness of disposition. The Scotch have much hair among the wool, will run like grey-hounds, and leap the hedges like hunters.

The farmers buy their sheep at the fairs in Wiltshire and Hampshire, and of the jobbers of west-country sheep at fairs within the county. "The flocks differ in number, in proportion to the right of common appertaining to the respective farms."

"The sheep in the parish of Hardmondsworth amount, I believe, to nearly two thousand; and from the best accounts I could collect, about six thousand are kept on Hounslow-heath" and the adjoining common of Sunbury, &c. originally nearly all of the Wiltshire sort; but such of them as have bred through several generations, have degene-

degenerated into a small unprofitable breed, proportioned to the poverty and exposure of their pasture.

The commons of this county, as every where else, are thinly stocked by poor half-starved, ragged coated, and wretched looking sheep.

Sheep are kept in this county all the year round, only where there are common rights sufficient to support them from Candlemas till the after-grass is ready to receive them.

On the commons above Riselip and Pinner, there are many kept, and folded on the arable land.

The greater part of the hay farmers are without common rights, and "devote their after-grass to the agistment of sheep and neat cattle, which they take in, sheep at 3s. 6d. per score, and bullocks at per head per week."

Poor pastures are well calculated to produce small, or stunted breeds of sheep, with light fleeces of fine wool, of the value of two and six-pence or three shillings: and, when made fat with high keep, a short-grained mutton; as the rich food of turnips, tares, rape, clover and sainfain, is to rear large sheep, with heavy fleeces, producing from seven to nine shillings, and coarse grained mutton.

Animals that are intended to be fattened with the most speed, the least food, and greatest profit, are, or ought to be, kept still, and as free from exercise as possible; as in the suckling of calves and house-lambs, which could not possibly be done with the same increase if they were allowed exercise. This practice applied to sheep, would shew, that for lean stock, much less food is required to support them in any desired condition in a still and quiet inclosure, than is necessary for the same animals if they took much exercise, such as in travelling to and from the fold. All sheep that are reared on commons, as I before observed, are naturally of a rambling and rest'ess disposition, wild, and galloping at the sight of men and dogs: taking so much exercise, wastes their

their fat, creates a voracious appetite, keeps down the weight of their carcase, is injurious to the wool, and, in hot weather, ruinous to the mutton.

The grey-hound like sheep, naturally suitable to "a wild, bleak, unproductive sandy county, abounding with rabbit-warrens," will always be perfectly unfit and improper for the same county after it has been well inclosed; and when, by means of marl and heavy green crops, it is become one of the most fruitful soils in the kingdom*.

Good hedges, small closes, and plentiful green crops, convey to the mind the idea of a quiet, docile, and perhaps of rather a heavy sheep, as the stock that would be certainly produced under such circumstances.

The mutton of *South-down* sheep is well known to be finer grained than that of any other which comes to market; sells higher in Smithfield than the *Norfolk* by sixpence a stone of eight pounds, and is retailed at a penny per pound higher. Its superiority is so fully established among the more wealthy families, that the butchers who serve them, always look the market over, in order to buy as many of the *South-down* breed as they know will be required by such of their customers as are willing to pay an advanced price for them.

That *South-down* sheep are a fit and profitable stock for other chalky hills besides those of *Sussex*, we have the evidence of the practical and enlightened Mr. Boys. See his Report of Kent, octavo, pages 132 and 133.

That they endured hard driving and folding in *Wiltshire*, better than other breeds, see the Marquis of Bath's experiments, in the Transactions of the Bath Society of Agriculture for the winter 1795-6.

* This applies particularly to *Norfolk*.—J. M.

Sheep are particularly fond of ragwort; of course they are proper stock in pastures where it prevails.—Northumberland, quarto, page 27.

Sheep were cured of the rot by being wintered on straw in a warm yard, in which there was, probably, sheds to keep them dry. North York, quarto, page 122.

A great sheep farmer in Surrey confirms what is said in the Rutland Report, that Welsh sheep are not at all affected by maggots.

Some of the Leicestershire sheep have lately come to Smithfield, which were particularly light in the leg. The same has longer been said of the Kentish, and is always noticed as a defect.

The Lincoln and Leicester sheep come to Smithfield in perfection, fresh shorn, in April; sometimes in flannel waistcoats, which are kept on till the sheep are sold, and then taken off by the seller, to be used on other sheep the following week. This seems a proper precaution at that season of the year.

At twenty or more miles from London, the dung and urine of sheep is worth about five shillings per head per annum. The animal is injured by the practice of folding nearly as much, even by a little driving; but if it is to be drove four or five miles daily, as in Wiltshire, &c. it will be injured to the full value of the manure which it yields.

The fold is the natural consequence of large tracts of waste and uninclosed land, of a thin population, and of farms being much too large for entire cultivation. Inclose the commons, downs and wastes, reduce the farms and closes to such sizes as admit of entire cultivation, and sheep folding will vanish.*

Inclosed

* Mr. Billingsley, in his Report of the county of Somerset, has warmly contended for the propriety of the folding system; but some observations of his make for the contrary side of the question; nay, prove it to be a bad practice;

Inclosed land, cultivated in the best manner, does not admit of the fold, without injuring the landlord, the tenant, and the community.

Sheep that have been reared and constantly pastured on chalk-hills, such as the south and west country downs, are free from the rot so long as they are continued in those situations. I have heard the same remarked of salt marshes, and that sheep with diseased livers, brought from rotting ground, heal and become fat in these marshes. Rotten sheep have in many instances been cured by feeding on the herbage growing in a thin soil on limestone rock.

Reasoning on these premises, I am inclined to think that on all soils strongly calcarious, and properly drained, sheep will continue sound.

It seems to be highly probable, that the most rotting soil may be cured of that defect, after it is well drained, by the addition of a proper quantity of calcarious matter; such as either lime, chalk, or marl; and I earnestly recommend this subject to the consideration of gentlemen of landed property, and also to every farmer, as a matter which deserves to be amply experimented*.

I think

practice; inasmuch as it injures the sheep, by causing the foot-rot to prevail among such flocks as are driven daily to and from the fold. He also assigns this as a reason why more sheep are not kept in the folding districts. And, further, he says, that by the practice of feeding sheep on vetches, clover, and turnips, they are kept free from the above malady. He also admits, that more sheep per acre may be kept by the latter method than the former. (See Somerset Report, pages 147 and 257).

To which I shall add a word or two of advice, namely—inclose the downs, and raise vetches, turnips, cole, and clover on them, for sheep feed, and cease to drive the flocks to and fro; which will, undoubtedly, be the means of improving the land, and the stock supported on it.—*J. M.*

* Since the foregoing passage was written, I have had the very great pleasure of meeting with one proof of it in the Staffordshire Report, quarto, page 60.

The highest honours of the kingdom would not be too great a reward for the man who should make public, an easy and cheap method of preventing the

I think there are about fourteen millions of ewes, and three millions of wethers and rams, together seventeen millions stock sheep, in South Britain; which is in the proportion of seventeen sheep to forty-six acres. The annual produce of these sheep is consumed at such ages, as to make the amount of animal food equal in weight to about eight millions and a half of full grown sheep.

“ The experiments with Spanish sheep, which have taken place in Middlesex, merit a particular detail in this Report.

“ In the summer of 1785, Sir Joseph Banks, Bart. procured from France a ram and an ewe of the true Merino breed, which he kept at Spring-grove, in this county. The flock whence they were selected, had at that time been kept in the province of Burgundy for eight years, without any ram from Spain being brought to it.

“ In the year 1787, after having clipped this ram and ewe twice, Sir Joseph delivered the four fleeces to Mr. Humphries, an intelligent manufacturer at Chippenham, who made from them cloth sufficient for a suit of cloaths; and this cloth was judged by the trade to be

the rot in sheep; and that such will be effected, there is no sufficient reason to doubt, as Mr. John Jeanes, of Alhampton, Castlecary, Somersetshire, has already proved himself in possession of the means of curing this destructive malady, even in its worst stages; and I believe the same may be said of Mr. Fleet, of Hants.—*J. M.*

“ That lime has a powerful effect on animals, is proved in the cases of broken-winded horses, which receive such relief by drinking lime-water, as to be perfectly as fit for all the common purposes of labour as sound horses, and even to be passed on the best judges for sound horses.”—*Mr. Wm. Bean.*

I am acquainted with a gentleman who had a leprosy on him, which prevented his obtaining any rest. His life was become a burden to him. He was perfectly cured by drinking lime-water. This gentleman informed me of several others who had received great benefit from it in cases somewhat similar.—*J. M.*

The scab on sheep is certainly cured by the use of a preparation published in the 7th volume of the Transactions of the London Society of Arts, &c.—*J. M.*

“ equal

“ equal in goodness to superfine broad cloth. In the year
 “ 1789, a comparison was made by Mr. Bell, a wool-
 “ stapler in Bermondsey-street, between sixteen South-
 “ down ewe fleeces, and an equal number of teg fleeces,
 “ their progeny by a Spanish ram. He reported that the
 “ sixteen South-down ewe fleeces weighed $30\frac{1}{2}$ lbs. and,
 “ when sorted, worth to the manufacturer 2l. 5s. $4\frac{1}{2}$ d.;
 “ and that the sixteen teg fleeces weighed $42\frac{1}{2}$ lbs. worth
 “ to the manufacturer 3l. 11s.—value of teg fleeces
 “ 1s. $7\frac{1}{4}$ d. per lb.; of ewes 1s. $5\frac{1}{4}$ d.; or the tegs 17 l. 15s.
 “ per pack, and the ewes only 15l. 5s.

“ Mr. Bell, however, according to the custom of his
 “ trade, broke or stapled this wool, which is, not to make
 “ any assortment for a higher value than 1s. $9\frac{1}{2}$ d. a pound;
 “ but he observed, in breaking the half Spanish fleeces,
 “ that a considerable quantity of wool of higher value
 “ was put into that assortment. In the year 1790, six-
 “ teen fleeces of South-down sheep, mixed partly half,
 “ and partly three-quarters, with Spanish, were put into
 “ Mr. Bell’s hands, and he was desired to sort them, as
 “ is done in Herefordshire, where the dearest class of
 “ wool, called “ picklock,” is estimated at 2s. 8d. a
 “ pound; which he did, and reported as follows: “ six-
 “ teen South-down and Spanish fleeces weighed 47 lb.;
 “ were worth to the manufacturer 4l. 12s. 10d.”—or
 1s. $11\frac{1}{2}$ d. per lb.

“ In the year 1792, a similar comparison was made
 “ by Messrs. Buxton, the present possessors of the wool-
 “ stapling business in Bermondsey-street, late Bell, be-
 “ tween twenty fleeces of Nottinghamshire forest ewes,
 “ and the same number of their progeny by a Spanish
 “ ram belonging to Sir Joseph Banks.

“ They reported, that the wool of the twenty original
 “ ewes weighed 51 lb. and was worth to the manufacturer

“ 3l.

“ 3l. 10s. 10½d.; that the wool of the twenty half-bred
 “ Spanish weighed 83 lb. and was worth to the manufac-
 “ turer 6l. 7s. 11½d.—value of forests 1s. 4½d. per lb.
 “ of half-bred Spanish 1s. 6½d.

“ In the year 1793 Sir Joseph having made a variety
 “ of experiments, all of which tended to prove that
 “ Spanish wool had not degenerated in fineness, even on
 “ his pasture at Spring-grave, though particularly unfit
 “ for sheep, determined to part with his wool, which had
 “ been kept for the purpose of comparison from the
 “ year 1788; and accordingly he sent the whole collec-
 “ tion to Messrs. Buxton; not expecting to hear any
 “ more concerning it, except by receiving a fair price,
 “ which he was certain, from the liberality he had
 “ observed in the dealings of those gentlemen, would, in
 “ due time, be remitted to him: he was, however, agree-
 “ ably surprized, on the 11th January 1794, by the
 “ receipt of a note, of which the following is a copy:

“ Messrs. Buxton present their respectful compliments
 “ to Sir Joseph Banks, and beg his acceptance of a piece
 “ of cloth, produced from three grey Spanish fleeces,
 “ weighing together 8 lb. and received by them from Sir
 “ Joseph Banks. Messrs. Buxton are informed from
 “ Mr. Wansey (the gentleman from whom they received
 “ the cloth in its manufactured state) that it is an excel-
 “ lent piece of cloth; but being made wholly of undyed
 “ wool, of its natural colour, the manufacturer is of
 “ opinion it will fade in the wear.

“ *Bermondsey-street,*
 “ 11th Jan. 1794.”

“ The cloth appearing to Sir Joseph very fine, he, on
 “ the 14th of January, forwarded it to Mr. Wallace,
 “ woollen-

“ woollen-draper in Bedford-street, a gentleman whose
 “ integrity of dealing he had long been accustomed to,
 “ with the following note :

“ *January 14th, 1794.*

“ Sir Joseph Banks presents his compliments to Mr.
 “ Wallace, and requests his opinion of the cloth which
 “ accompanies this, respecting its value per yard, and its
 “ degree of fineness, compared with superfine broad.”

“ To this Mr. Wallace returned, on the 18th, the
 “ following answer :

“ *Bedford-street, Jan. 18th, 1794.*

“ SIR,

“ I have had the favour of your note, and have ex-
 “ amined the cloth you sent for my inspection, very mi-
 “ nutely, and find it in every respect very excellent. The
 “ wool is remarkably good, though I have cloth, which,
 “ in my opinion, is made of rather finer wool, though
 “ that may admit of a doubt, as judging from the feel of
 “ the cloth depends much upon the dressing, and cannot
 “ be so correct as from the wool itself. The spinning is
 “ very fine, and upon the whole, it may, I think, be
 “ ranked with the best superfine cloth manufactured in
 “ England; if I except a few pieces made at a very high
 “ price, and merely out of curiosity. I find it stouter
 “ than our superfine cloth in general, and am of opinion
 “ that such cloth is well worth nineteen shillings a yard,
 “ or more. I return the cloth by the bearer; and have
 “ the honour to be, &c. &c.

“ JOHN WALLACE.”

“ The first grey lamb bred by Sir Joseph, was dropped
 “ in the year 1789, and clipped in 1790, at which time the
 “ Spanish breed had been five years in England, and four-
 “ teen years out of Spain. This lamb and another, both
 “ males, were kept for castration, which is known to
 “ ameliorate the wool; but Sir Joseph did not chuse to
 “ obstruct his experiments, which were carrying on in
 “ several parts of the kingdom, by castrating white lambs
 “ of the pure Spanish blood.

“ The deduction from this experiment, that cloth may
 “ be made from the wool of sheep fourteen years after the
 “ original stock has been imported from Spain, as fine
 “ at least as that usually manufactured from imported
 “ Spanish wool, appears evident. For the arrangement
 “ of it, we are indebted to the judicious discrimination of
 “ Mr. Wansey.

“ By the colour of the fleeces, all suspicion of Spanish
 “ imported wool being mixed in the cloth, is done away,
 “ for no coloured Spanish wool is sent out of Spain, and
 “ moreover, the fleeces being only three in number, all
 “ idea of a small portion of very fine wool having been
 “ carefully selected from a much larger quantity of in-
 “ ferior quality, is precluded.”—*P. Foot.*

A NOTE FROM ONE OF THE RETURNED REPORTS.

“ At Finchley, the farmers buy many ewes of the Wiltshire breed, as
 “ their nature seems better adapted for the common, being light, and biting
 “ on less compass.

“ The rot in sheep in these parts, is generally thought to proceed from
 “ an insect in a web, the resemblance of a spider, with a white back part,
 “ which frequently comes on the earth, more particularly on the commons
 “ of Middlesex, about the middle of September, when the sheep can scarcely
 “ avoid picking it up in feeding; and those farmers that are acquainted of the
 “ danger, generally take off their sheep the latter end of August, and put
 “ them in their inclosed grounds. I have frequently observed, they most
 “ infect the earth in a dry September.”

House-

House-Lambs.—The ewes are always, without exception, of the Dorsetshire breed, and even of these there are not more than one in three that will lamb sufficiently early for the purpose of house-lamb.

The early lambing ewes are sought for by the breeders of this county with great diligence throughout the county of Dorset, and at the fairs where such stock are usually sold. The prices vary, from 35s. to 42s.

Such lambs as can be warranted of a fair complexion after being butchered, are held in the highest esteem, which those bought promiscuously in Dorsetshire, or at the fairs, cannot be: *this preference induces those breeders and sucklers who are in the secret, to select rams which they can depend on, for getting lambs whose meat shall be of that quality.*

The sucklers, salesmen, and butchers of London, are aware that such lambs as have *sharp barbs* on the inside of their lips, are certainly of a *deep colour* after being butchered; and all those whose *barbs* are naturally *blunt*, do as certainly produce fair meat.

This knowledge has been the occasion of many lambs of the latter kind being kept for rams, and sent into Dorsetshire, expressly for the purpose of improving the colour of the flesh of house-lambs.

The issue of such rams can generally be warranted fair, and such meat always sells at a higher price; hence arose the mistaken notion, that Middlesex rams were necessary to procure house-lambs.

The sheep which begin to lamb about Michaelmas, are kept in the close during the day, and in the house during the night, until they have produced twenty or thirty lambs. These lambs are then put into a lamb-house, which is kept constantly well littered with clean wheat straw; and chalk*, both in lump and in powder, is provided for them

* * The chalk is, usually, previously baked in an oven.—Mr. Cole.

to lick, in order to prevent looseness, and thereby preserve the lambs in health. As a prevention against gnawing the boards, or eating each other's wool, a little wheat straw is placed, with the ears downwards, in a rack within their reach, with which they amuse themselves, and of which they eat a small quantity.

In this house they are kept, with great care and attention, until fit for the butcher.

“ The mothers of the lambs are turned, every night at eight o'clock, into the lamb-house to their offspring.—
“ At six o'clock in the morning these mothers are separated from their lambs, and turned into the pastures ;”
and at eight o'clock, such ewes as have lost their own lambs, and those ewes whose lambs are sold, are brought in, and held by the head till the lambs by turns suck them clean : they are then turned into the pasture ; and at twelve o'clock the mothers of the lambs are driven from the pasture into the lamb-house for an hour, in the course of which time each lamb is suckled by its mother. At four o'clock all the ewes that have not lambs of their own are again brought to the lamb-house, and held for the lambs to suck ; and at eight the mothers of the lambs are brought to them for the night.

If a ewe gives more milk than its lamb will suck, the superabundance is given to the twins, or to any other lamb whose mother may not be able to furnish it with sufficient food. The shepherd must in this case hold the ewe, or she would not suffer the strange lamb to suck. From their timid nature, it is extremely essential that they should be kept free from every species of unnecessary disturbance. This method of suckling is continued all the year. The breeders select such of the lambs as become fat enough, and of proper age (about eight weeks old) for slaughter, and send them to market during December,
and

and three or four succeeding months, at prices which vary from one guinea to four, and the rest of the year at about two guineas each. This is severe work for the ewes, and some of them die under excess of exhaustion. However, care is taken that they have plenty of food; for when green food (*viz.* turnips, cole, rye, tares, clover, &c.) begins to fail, brewers' grains* are given them in troughs, and second-crop hay in racks; as well to support the ewes, as to supply the lambs with plenty of *milk*: for if *that* should not be abundant, the lambs would become stunted, in which case no food could fatten them.

" The ewes should be kept free from the foot-rot and scab; and if they have any pitch mark on them when they lamb, it must be cut off before the lambs be taken into the house, or they will eat it, and thereby greatly prejudice their future growth.

" A lamb-house, to suckle from 160 to 180 lambs at a time, should be 70 feet long and 18 feet broad, with three coops of different sizes at each end, so constructed as to divide the lambs according to their ages.

" The ewes, when separated from the lambs, ought to be so disposed as to enable the lambs to find their mothers without trouble; and for this purpose deal hurdles are used, placed about the middle of the sheep-house.

" Punctuality of time in letting the ewes in to the lambs, and keeping the lamb-house very cleanly littered, are very necessary precautions."

A friend of mine, who is well acquainted with the subject, says the farmers of Middlesex do not now rear half so many house-lambs as they did about twenty years ago. In Surrey they are likewise falling off. The suckling system is removing to a greater distance from the *metropolis*,

* These were first given to ewes by the late Mr. Naylor, of this county. He also was the first person who pulled out all the remaining front teeth of a broken-mouthed ewe; observing that they fed much better without teeth than with the loss of one or two.

to *which place* many fat lambs are now sent alive, in light four-wheeled covered carriages.

Grass-Lambs—The vicinity of Smithfield-market, makes early grass-lambs an object of considerable importance to the farmers of this county. The Dorset ewes are chiefly selected for this purpose. They are purchased at Weyhill, Kingston, and other fairs, forward enough to drop their lambs in January. The price from 30s. to 35s. The breeders keep the ewes and lambs principally on turnips, and second-crop hay. They sell the lambs in the months of April and May, fat, at from 25s. to upwards of 35s. each.

The ewes being dried early, are fattened and brought to market about Michaelmas, and sold at the same prices.

The wool is about three pounds, which, at 10d. amounts to 2s. 6d. The whole of the stock is cleared within the year, and the profit or loss thereby ascertained. The account in general is as follows:

	£.	s.	d.
The lamb sells for - - - -	1	10	0
The ewe for - - - - -	1	10	0
The wool at 2s. 6d. or - - - -	0	2	0
Together - - - - -	£.3	2	0
Deduct prime cost - - - - -	1	12	0
Remains, the increase of a ewe in 1 year	£.1	10	0

NOTES.

- " About twenty years ago, I bought Dorsetshire ewes from Weyhill-fair
 " at about 19s. to 23s. at the highest, and sold my lambs at Easter (which,
 " being a feasting time, was a time of most demand, whether a little earlier
 " or later) at 27s. or 28s. without weighing, and the inferior ones at 6d. a lb.
 " turned out from 22s. to 24s. The ewes are certainly now higher, and I should
 " suppose that the lambs, from the general rise of provisions, must be so
 " too.

“ too. These lambs were yeaned in the turnips at Walton on Thames, and sold out from them.”—*Sir Rich. Sutton.*

“ Some, though not many sheep, are bred in this county, and fed for the butcher; but in a situation so near the metropolis, and where consequently the land must be so high-rented, extensive breeding is not to be expected; but a great number of ewes are kept in this county, more particularly about Hendon and Finchley, for one of the most lucrative purposes, and which perhaps is carried on to more advantage, and on a larger scale here, than in any other part of the kingdom. It will easily occur to the reader, that I mean the breeding and fattening house-lambs for the London markets; a traffic which there is reason to believe, originated in Middlesex, and begins now to spread itself over other parts of the island. It is not in my power to enter into so full a detail on this subject as is necessary to be done, but in an agricultural history of this county, a very decided attention ought surely to be paid to it, as it involves not only a very profitable branch of farming, but also furnishes a market for the after-math of the county, when made into hay; which, if got in in tolerable order, is said to afford a food very proper for the ewes during the time of suckling. And if the season proves so unfavourable that this second (and I believe sometimes third) crop of grass is not fit for the above use, it is sold in London for packing china, glass, and other goods, for which the softness of its texture makes it a proper material.”—*Note in one of the returned Reports.*

“ The suckling sheep are apt to look very thin, which might be in part prevented, if they were, during suckling, kept upon dry ground, and had an over abundance of food; the remainder of which should be given to lean stock, a few of which might be kept near at hand for that purpose. Where there is a great exertion, the stomach is apt to be delicate, and an attention should be given to it. From this method, the ewes, after the lambs are sold, would fat sooner, from being in better health. To turn the penny as soon as possible, is the great object in agriculture.”—*T. S. D. Bucknall, Esq.*

Memorandum of a practice in France, for improving the breed of sheep.

—“ There is a kind of sheep called beron, or perrot, in the mountains of Languedoc, which are reared in a peculiar manner. From the time they are born they are frequently bathed in cold water, which makes them very hardy and robust, and gives them an extraordinary appetite. Their principal nourishment is the meal of wheat or barley, mixed with milk. Owing to this nourishing food, they soon become larger and fatter than other lambs of the same age. The meat is excellent, and much sought after; and the fleece is longer, thicker, and finer, than others of the same breed.

“ As an additional proof of the efficacy of the above practice of bathing lambs in cold water, it is proper to observe, that it is now found of the greatest use, when young turkies come too early, or when the season is cold, to bathe them every morning in cold water, for eight or ten days, and to give them a pepper-corn every day.”

SECT. III.—HORSES:

AND THEIR USE IN HUSBANDRY COMPARED WITH
THAT OF OXEN.

“ NUMBER of horses in the cities of London and
“ Westminster, and in the county of Middlesex.

	Horses paying the duty of 10s.	Horses paying 2s. duty.
“ London - - - -	2,944	1,183
“ Westminster - - -	5,613	1,630
“ Middlesex - - - -	9,709	9,896
“ 18th March, 1797.	18,266	12,709

“ Few horses of any excellency are bred in the county of Middlesex. The farmers in general employ the produce of their land in a more profitable way, and supply themselves with cart-horses, which are compact and bony, at the different fairs in the neighbouring counties, and at the repositories and stables of the several dealers in the metropolis. Many of the horses used in the business of husbandry in this county, as well as those used by the brewers and carmen in London, are bred in Leicestershire, and the adjoining counties. They are generally bought by country dealers, at two or three years old, and sold by them to the farmers of Wiltshire, Hampshire, and Berkshire, who work them gently the first year, and keep them on until they are about five years old, when they sell them to the London dealers (who are always looking out for horses for the brewers and carmen) at very high prices, being then of a proper age for constant work.”

“ The draught-horses in the possession of the brewers and distillers, are, as to strength and figure, scarcely to be equalled.”

“ Many

"Many of the saddle and coach-horses are bred in Yorkshire, and brought from that and other counties by the dealers."

Breeding.—If the breeder's object be *draught*, any mare that is noted for a *quick walk*, and *powerful draught*, and carrying *much flesh*, should be kept for breeding, and should be put to a horse possessing the same qualities.

Their offspring should not be crossed, without full proof that such other breed has the same qualities in at least an equal degree. The same rule should be observed as to breeding for the saddle, the coach, the race, and for the procuring of famous trotting horses. If the last property may be supposed to possess much merit, the breed might be raised from such a stock as that of a mare poney of Messrs. Cook, Southwark, which trotted ten miles from the Borough, towards Sutton, which is by no means a level road, in thirty-two minutes and an half.

Feeding Farm Horses.—Rye, and early sown winter tares on land highly manured, will be ready by the first day in May, and may be daily mown, and given to horses in the stable for three months, with half a bushel of beans per week each horse. From that time till the first of November, they may lie in the grass closes that have been cleared of the hay, and be allowed a bushel of beans each horse per week. The weather will then be growing too cold for hard-working horses to lie out; they must be taken into the stable, and be allowed chopped tare hay, as much as they will eat, mixed with three pecks of beans and a bushel of horse-pollard, and be racked up with tare hay at night, for six months, when the rye and tares will be again ready. According to this mode of feeding horses, tares must be grown in sufficient quantity to supply them all the year, or the deficiency must be made up with
clover

clover hay. For want of both tares and clover (though no good farmer should be without plenty of both), unthrashed oats may be cut into chaff, of which they must have as much as they will eat; be racked up with the best hay, and have about three pecks of beans weekly. By the former method one horse will eat thirty-nine bushels of beans, and twenty-six bushels of pollard, which cost something above 7l.

Some persons feed with oats and beans, in the proportion of six quarters and an half of the former, and one of the latter for a year, which amounts to the same sum.

With the first of these feeds, my horses have gone an hundred miles per week, generally loaded both going and returning; and with one or other of the latter feeds, the horses of Middlesex do as much labour all the year round.

Most of the Middlesex farmers agree in the maxim of "feeding highly and doing much work."

The expence of a farm horse in this county, including his harness and proportion of implements, if he lie out three months in the year, is about thirty-five pounds; or if he lies in the stable all the year, it is full forty pounds: particulars as under*.

Every

	£.	s.	d.
* After-grass three months - - - - -	0	14	0
Hay of tares, clover, or meadow, four load, at 5l. - - -	20	0	0
Oats, six quarters and a half, at 18s. - - - - -	5	17	0
Beans, one quarter - - - - -	1	6	0
Straw for his bed, one load - - - - -	1	10	0
Shoeing - - - - -	1	0	0
Farrier, and accidents - - - - -	1	0	0
Proportion of first cost, decline in value, and interest of first cost	3	0	0
Proportion of new harness, mending, and interest of first cost	1	8	0
Proportion of carts, ploughs, harrows, decline in value, repairs, and interest	1	5	0
	£.37	0	0
Deduct the value of his dung, at 1s. a week, for 3 quarters of a year	2	0	0
Remains the annual expence of each horse that lies out 3 months or full two shillings and six-pence for every day he labours.	£.35	0	0

Brought

Every horse employed by the farmers of this county, consumes about the produce of four acres of land. Those of brewers, distillers, &c. being of larger size, and much higher kept, require the produce of six acres. There are many horses in Britain who do not work so hard as in this county, and are of course kept on a lower diet. The mail-coach, and other horses of that description, are allowed as many oats as they can eat. *On an average, each horse in Britain does probably consume the produce of four acres of corn, hay, straw, &c.**

The

Brought forward	- - - - -	£.35 0 0
If he lies in the stable all the year, the extra straw used for his bed, and his worse health, will more than equal his dung, and he will consume more hay by	- - - - -	} 5 0 0
A farmer's horse, one year in the house, costs	- - - - -	£.40 0 0
or three shillings for each day's labour.—J. M.		

* The following paper on the feeding of farmer's working horses, was received from Mr. Gretton.

" There are many methods to keep working-horses, as by bran, beans, oats, clover hay, meadow hay, grains, cut chaff of clover hay and straw, or wheat and oat chaff, buck-wheat, and barley eyles, or sprit. And the method of feeding is varied according to local situations, and provincial customs. For example, in the isle of Thanet their customary feed is a little sainfoin or clover; say one truss of fifty-six pounds weight per horse per week: this they call rack meat, and the rest of his food is made up of the small Essex, or French bean, cut chaff of clover, beans, pea haulm, and wheat straw; the proportions one quart of beans, to two pecks of chaff, so cut. Of this a horse will, and usually does, consume one bushel chaffed, and two quarters of beans, in a day of twenty-four hours. Oats they seldom give their working-horses in that island. Refuse barley, or what is called tail, they do, but that is only when it is in greater quantity than the fowl walk will consume. This method of keep generally, on an average, amounts to nearly nine shillings per week per horse, labour included	- - - - -	£.0 9 0
" One truss of straw	- - - - -	0 0 8
		£.0 9 8

" In very many parts of Kent, this method obtains; but when sainfoin is not grown in proportion to the meadow or upland hay, the latter kinds are most used, in the following proportions:

" Two

The following letter, on the treatment of dray-horses in London, was received from Mr. Alexander M^r Leay.

" SIR,

" Having, agreeably to your desire, endeavoured to learn " whether the dray-horses in London lie on boards " without litter, at any or at all seasons of the year," I " have now the honour of laying before you the result of " my enquiries upon that subject.

" The brewers in London are chiefly supplied with " horses by the Berkshire farmers, who buy them young " from Northamptonshire, and work them two or three " years before they sell them.

" The brewers' stables are floored with stone or brick, " and are daily cleaned and littered, by men whose busi- " ness it is to attend them night and day. I cannot learn " that the horses of any brewer in London lie on boards

" Two truss of 56 lb. to each horse, per week of 7 days, at 1s. 9d.	£.0	3	6
" Two bushels of oats, eight-gallon measure, per week, at 2s. 6d.	0	5	0
" Half a bushel of beans at 4s.	-	-	0 2 0

		0	10	6
" One truss of straw	-	-	0	0 8

£.0 11 2

" I have estimated the tables upon an average of the last ten years price of " horse fodder. Some gardening farmers near London, feed with bran and " beans only, for manger feed; with hay or clover for rack meat: their " horses work very hard, by drawing heavy and frequent loads of garden " stuff to market, and dung back. The brewers feed with grains, beans, " clover or sainfoin. The stage-waggons and other roadsters of this class, " with beans, oats, hay or clover. Stage and post coach-horses, feed chiefly " on oats, beans and meadow hay. Yet notwithstanding, I believe it will " be found that these different methods will stand the consumer in nearly " the amount of the above tables. As to the quantity of land necessary to " produce a sufficient feed for one horse, that, in my opinion, is not by any " calculation to be fixed even to a probability. Lands vary so much in good- " ness, local advantages and tilths, that they produce from one quarter, to " ten quarters of corn, and from a dozen truss, to loads per acre."

" without

“ without litter. On the contrary, I understand they
 “ pay the greatest attention to their being well littered at
 “ all seasons ; for they consider it as highly necessary that
 “ the animals should be kept as warm as possible in the
 “ stable, after having been heated by the hard work they
 “ are usually kept to out of doors. This is certainly rea-
 “ sonable, and I believe the health of the dray-horses
 “ depends as much on such treatment as on their food.
 “ Currying has generally been considered as of the utmost
 “ importance in the management of horses ; but dray-
 “ horses are curried but very little. Indeed, having fre-
 “ quently no more than six hours a day for rest and
 “ feeding, it cannot be supposed that there is much time
 “ employed in currying them. They are, however, well
 “ rubbed down after they come in from work. The
 “ racks are always kept full of hay, so that the horses
 “ have as much as they can eat. They get corn (oats)
 “ before they go to work in the morning, and again
 “ about half an hour after they come in from work,
 “ but not sooner. Beans are not generally given ; but I
 “ know not for what reason. It was customary some
 “ years ago, for brewers to give grains to their horses ;
 “ but they found that horses so fed, *rotted*, and died in the
 “ course of a very little time ; and upon dissection, large
 “ stony concretions have been found in their bladders.
 “ At present, no grains are given, at least by the princi-
 “ pal brewers.

“ In the course of these enquiries, I was told that in
 “ Sweden it is usual for horses to lie on boards ; but as I
 “ was not informed that they lie without litter, I am in-
 “ clined to believe they do not ; for it being likely that
 “ it is for the sake of warmth they have substituted
 “ boards for stones in that cold country, it would be in-
 “ consistent to exclude litter, without which, I think
 “ even

“ even boards would be too cold a bed for a horse heated
 “ and fatigued by work.

“ That a less quantity of litter would be necessary with
 “ boards than with stone, is certain; and it would perhaps
 “ be a great improvement, to have all stables floored with
 “ plank.

“ I have the honour to be,

“ With the greatest respect,

“ Sir, &c.

“ 29th Dec. 1794.

ALEX. M'LEAY.

“ *Sir John Sinclair, Bart.*”

Observations by Mr. Cole, respecting the feeding of
 horses in London.

“ *Query 1.*—How do you like hay made of rye-grass
 “ and clover?

“ *Answer.*—With respect to rye-grass and clover hay,
 “ it is good food for horses in the winter months; but
 “ after Lady-day, this kind of hay loses its virtue, and
 “ becomes harsh and dry. Hence horses, particularly
 “ coach and saddle-horses, do not thrive on it.

“ *Query 2.*—What is the best hay for horses, and why?

“ *Answer.*—Meadow hay for coach, or saddle-horses,
 “ is certainly preferable; the moisture remaining so much
 “ longer in it. Draught-horses may do on hay made of
 “ clover or rye-grass, but it is not suitable to horses of
 “ greater speed.

“ *Query 3.*—Whether do you prefer beans or oats?

“ *Answer.*—Good oats I presume to be the best food for
 “ coach, or saddle-horses, being cooler. Beans I have
 “ always found prejudicial to them. They are certainly
 “ useful for draught-horses, being mixed with chaff, as
 “ the latter kind of horses are not so liable to be heated in
 “ their blood as the former.

“ *Query*

" *Query 4.*—What do you think of barley for horses?

" *Answer.*—As to barley, I think it too hot food for any horse, even of the draught kind, having known it bring on violent surfeits, &c. in consequence of its creating thirst.

" *Query 5.*—What colour do you prefer?

" *Answer.*—The brown bays are in general hardiest. The blacks are a very good colour. With regard to greys, the only objection to them, is their eyes, being apt to grow blind. Next to them, chesnuds have that defect.

" *Query 6.*—What is the longevity of horses in London?

" *Answer.*—In regard to the longevity of horses, in London it is much shorter than in the country, where, being more in the open air, like human beings, their lungs are less liable to decay, especially where they have the opportunity of grass in the summer months.

" The average longevity in London, is from sixteen to eighteen; in the country from twenty to twenty-five years."

HORSES IN COMPARISON WITH OXEN.

OXEN are very little used for draught in this county. The practice however is not entirely given up: as I suppose there are now about thirteen working oxen in the county, though I believe not one of them in the hands of a professional farmer*.

* Mr. Foot's Report in 1793, mentions the parties who worked 23 oxen. Since which time Mr. Jenkins has disused

-	-	-	10
			—
The rest are only			13
			—

Whether these are continued at work, has not come to my knowledge.—

J. M.

From

From a variety of observations made on the effects produced by the use of oxen in working arable land, I am decidedly of opinion, that their treading, works wet clayey soils into a state of steril mortar, much more than the treading of horses; they are also, I think, much less fit than horses on any land whatever, for the purpose of harrowing or rolling wheat in the spring, and even for the covering of spring-sown crops of every kind. The formation of the feet of oxen renders them very *unfit to be used in either the plough, the harrow, or the roller, on all clay, and other adhesive soils*, while they are wet, or at least not sufficiently dry to prevent that clinging, mortaring and poaching, which, on such land, ought to be avoided by all possible means. In short, *they are as much inferior to horses, on all wet soils for these purposes, as turkies are to swans for the purpose of swimming.*

Most of the meadow land in England, is generally much too moist, to bear the salutary operations of bush-harrowing and rolling by oxen so well as with horses.

It must be allowed on all hands, that *oxen are by no means equal to horses on turnpike roads*, which being usually mended with flints, stone, and other hard and cutting substances, injure their feet so much, that they would scarcely hold out even for a few short journies; and they must be still less proper to be used in such teams as are half, or more of their time, on these roads, as is the case with most of the teams in this county.

The division, or parting of an ox's foot, most probably weakens the part, and consequently renders him less able to perform constant labour of any kind, so well as a horse of the same weight is found to do.

In hot weather also, it is particularly observable, that oxen are much more fatigued with exertion than horses are, for in every hot day they must be allowed to stop occasionally

asionally, for the purpose of recovering their breath; and as this season is usually a busy time with farmers, horses must then have an obvious advantage, as they do not require to stop so often in the course of their work.

I have also noticed a fly in summer, which oxen are not able to endure, and they are infinitely more ungovernable, when so attacked, than draught-horses are.

There are some grounds for supposing that oxen were formerly much more generally used by the farmers of England than they are at present; and it seems fair to suppose, that they had substantial reasons for discontinuing them. Oxen, probably, first gave place to horse-teams in all work to be done on roads covered with hard materials; and next, for every purpose where the work required either active exertion, or continued labour. I apprehend that, from their inability for these purposes, and from its being found that in constant work they must be fed nearly, if not quite, as high as horses, both masters and servants were ultimately induced to give a preference to the latter.

In all cases *where the journies are particularly long, horses have always deservedly taken the lead.*

The increase of great towns, likewise, has a tendency to create constant employment for the teams of farmers in the vicinity of such towns, in the carrying their produce thither, and returning with manure. In such situations, horses must be allowed to have the preference.

Large farms have more constant employment for teams than small ones; and as it is allowed on all hands, that the number of large farms has increased, horse-teams would of course be most likely to suit the general purposes of such farms.

The modern improvements in agriculture have also a considerable tendency towards increasing the number of

draught-horses at the expence of ox-teams, by reason of the much greater quantity of labour and exertion required in carrying on an improved system of farming, than was usually thought necessary under a less spirited course of husbandry.

It is probable also, that the ultimate destination of an ox, to serve as the food of man, will forever prevent his being kept longer than till he has acquired his full growth, consequently he will be sold just at the time when his strength is such as to make him equal to the task of performing the different works of a farm; and it is not to be expected that the farmer will keep his oxen after they have attained this age, as they uniformly decrease in point of profit from that time.

Indeed providence seems to have intended horses to perform the labour, and promote the pleasures of mankind; and oxen to form a principal part of their food.

The butchers inform me, that the flesh of an ox that has been much worked, is as hard as brawn in every part that has been pressed by the harness; and I apprehend that every sinew and muscle of his body will be tougher, and less eatable, in proportion to the quantity of labour he has performed, and the number of years he has been kept at it.

Both oxen and horses are nearly equally unfit for constant and severe labour until they are six years old; and in case oxen were worked during all their prime, or until they were twelve or more years of age, I cannot suppose that they would then turn out to be very prime beef.

Two oxen have usually been, and still are, estimated as only equal in draught to one horse, by forty-nine farmers in every fifty. This perhaps has been one of the means of introducing horses in the place of oxen; though (in a paper of this kind) it is fair to acknowledge, that in comparing

paring the powers of an ox for draught, with those of a horse, the former has very seldom had justice done him, otherwise the disparagement would not have been so considerable. The comparison has usually been made with oxen from three to five or six, against horses of six or more years of age: as well might it be expected that a colt should be as powerful as a horse, or that a boy should carry as great a load as a man.

Further, it must be confessed, that an ox has more time to lie down, and rest his limbs, than an horse can have, on account of their different modes of feeding: but this advantage is nearly balanced by the present mode of feeding horses with chaff.

Observe too, that during the summer months, when they both lie in pasture, the dung of an ox is more valuable than that of a horse.

If oxen have the advantage over horses in any other respects than those just mentioned, I think it must be on small farms; where there is not business sufficient to keep one or two teams in constant daily work. Some such situations there undoubtedly are, and it is probable that, on all such days as the team is not wanted, oxen might be kept in pasture, or on grass, with less disadvantage than horses; but under an improved system, very few such days as these will occur, even on small farms; and on large farms, scarcely any.

Again, although oxen are not allowed corn, but are principally confined to a diet of hay, and when out of work, to straw; yet it should be considered, that they are universally put to do the most easy works of the farm, and which do not require dispatch, consequently it is found that hay, &c. is sufficient to support them under such moderate labour.

It is by no means determined that horses could not perform the same moderate degree of labour with as cheap a food; but it admits of no question, that neither oxen nor horses can support so much labour when fed with hay alone, as they can do with the addition of better keep. *As horses are constantly put to do the heaviest work, and such particularly as requires dispatch, it should not excite surprize, that in order to perform such increased labour, they should require a more hearty and nutritious diet.*

The busy seasons of seed-time, hay-making, and harvesting, require a much greater degree of speed and activity than is at all compatible with the slow and solemn pace of oxen; and although it must be allowed that horses must be highly kept, in order to enable them to perform what may be called severe labour with activity, yet oxen, let their feed be what it may, cannot, from their very nature, perform any labour whatever with equal facility and dispatch.

Upon the whole, I am of opinion that *the very few advantages which oxen possess, are not by any means of such consideration as to compensate for the actual and considerable damage which their being used would do upon some kinds of land; nor are they, I conceive, so proper for the general purposes of a farm, as horses.*

NOTES.

"I kept two teams of oxen for about two years, and on the most attentive comparison between them and horses, am decidedly of opinion that, including all the different seasons and kinds of labour to be done on a Middlesex farm, horses are entitled considerably to the preference."—*Edward Jenkins.*

On the 28th of May, 1796, I attended the ploughing at Mr. Logan's (Cheam, Surrey) with two ox ploughs without a driver. The land had been fallowed all the last year, ploughed quite flat, strike furrowed, and left all the winter drowning in water, being a very tenacious loam on yellow clay. Bledge-rows full of clms; two ploughs at work, with one pair of stout oxen

in

In each. One pair about eight years old; the other four off; drawing Mr. Small's chain ploughs—one of them with a very well-shaped cast-iron mould-board; the other, an elm bent board of the neighbourhood. They turned a furrow of eleven inches, by from two to five, or an average of three and a half—the cast-iron bright as silver. Their pace was 440 yards in seventeen minutes, three times tried; constant going out between seven and eight hours; deduct for stoppage and their constant draught, will be about six hours: in which time, at the said pace, they ploughed 2 roods 16 perch per day, or 3 acres, 2 roods, 16 perch per week of six days. The soil was quite free from stones, and worked very tough, and was evidently too severe labour; so much so, indeed, that the younger pair had turned themselves out of the work, the men said, at least ten times the day before. One of my ploughs, with two horses, would have done as much work as both these, and vastly better, as six-inch furrows are better than eleven. The men observed, that if they were to take a narrower furrow than eleven inches, they should do almost nothing, as the oxen would not bear being drove much faster than the very slow pace at which I found them.

The difference in the price of hay and corn, as articles of food in the keep of horses and oxen, upon which so much reliance is placed by the advocates for oxen, on a fair comparison, will be found to turn out totally different from the conclusions they draw. This will appear in the following short statement, namely:

I now sell my hay at 5 l. 10 s. per 18 cwt. which is per ton	£. 6 2 3½
And buy my oats at 17 s. 6 d. per quarter, which is per ditto	6 2 6

Every body knows that oats contain more nourishment than hay, and being at the same price per ton, it is obvious they are the cheaper feed.

Those gentlemen, for of farmers there are none, who are advocates for the use of oxen in draught, should breed them without horns, with great strength of body, of a quick walk, and without a division in their feet.

My observations on the feeding of them (oxen) correspond nearly with those of Sir Richard Sutton, who says, “when I had a farm twenty-two or twenty-three years ago near St. Alban's, I procured four fine oxen out of Sussex, with a man perfectly used to them, and afterwards four more of a lighter active breed out of Pembrokeshire. I found that my oxen, though the man fed them as he pleased, could not keep on work regularly against a team of horses. He was often obliged to beg a day's rest for a pair of them by turns, and owned they would not stand the constant work. I am persuaded that six oxen in work are not more than equal to four horses. As to the comparative expence of their food, I found that six oxen consumed 27 truss of hay per week. Hay (I mean clover hay) was then 36 s. a load or 1 s. a truss. My four horses eat 10 truss of hay per week, and a bushel of oats a day, then at 16 s. a quarter; so that they cost me 24 s. instead of 27 s. This convinced me that oxen do not answer where one is obliged to feed them much on hay. They will do far better where there is much pasture, as they work very well from grass. It will answer to use them very well, where it is worth while to rear cattle, which I generally sell when turned of three years old. If they are worked from three to five years old they will continue improving,

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"and whatever work they do, more or less (for I would not depend on them as a constant working team), would then be clear gain. Some years ago I bought some draught oxen ready broke, and intended to have my steers broke in so as to come in succession, but was defeated in it, by the difficulty (pretended at least) of managing mine (the labourers here being quite unused to it). I have now, however, a pair ready broke, and my bailiff promises fair to make a new trial with my own. As to the pretended advantage of oxen, in cheapness of shoeing, I am convinced it is none at all. Oxen are very troublesome to be shod; they must generally be hobbled and thrown, and seldom keep on their shoes even three days."—*Sir Richard Sutton.*

"Oxen are wholly incompatible; for they could not walk upon the surface of fen land without being bogged."—*Huntingdon Report.*

Observations on Sir Richard Sutton's Note.

Each of Sir Richard Sutton's oxen ate six loads and a half of clover hay per annum, which, at the present price of 5l. 5s. amounts to £. 34 2 6
His horses ate 3 loads and 22 trusses of the like hay, } 18 19 2
at 5l. 5s. is - - - - -
Oats, 9½ bushels, at 2s. is - - - - - 9 2 6

£3 1 8

Remains the cheaper feed of one horse for one year - £. 6 0 10

The four first articles mentioned in horse-keep in the former part of this section, amount to 27l. 17s. for one year, which is still 4s. more in favour of horse-keep.

The advocates for oxen in preference to horses, are in general persons without much experience in the comparative labour of a farm, and one of their most plausible reasons is, that when the labour of a horse is done, he is consigned to the dogs, with as much certainty as an ox is fattened for the butcher. An unreasonable prejudice in the people of Britain against the eating of horse-flesh, occasions this different destination of these animals, and is the means of compelling the farmer to part with a horse for a guinea, which otherwise might be fattened and sold for ten or twenty. It would be as laudable to remove such a prejudice, as it would be impolitic to urge the general use of oxen for the purpose of draught.—*J. M.*

SECT. IV.—HOGS.

“ A VERY large market is held on Finchley-common
 “ for the sale of this useful animal, where great numbers
 “ are purchased fat, by the hog-butchers of London, as
 “ well as vast quantities of lean stores, brought from
 “ Shropshire, and other distant counties, to be fed by the
 “ malt-distillers. Here it may be necessary for the Board
 “ to use their endeavours to correct an error too much
 “ believed by the vulgar, that the malt-distillers’ pork is
 “ not good; the hogs, it is asserted, being kept in a state
 “ of intoxication; whereas the contrary is the fact; it
 “ being notorious that the best pork for sea voyages is
 “ that from the malt-distillers (who always finish them
 “ with *hard meat*); and it is equally certain, that the best
 “ bacon in the kingdom is made from those hogs; and he
 “ would be a bad workman, who left spirit enough in his
 “ wash to make his hogs drunk*.”

There is very little bacon dried in this county, except by the professed bacon merchants. The general method is, to cure it in a salt brine, where it is kept till used as pickled pork†. I met with an exception to this, indeed, at Mr. Robinson’s, Wyck-house, who has an oven for smoke-drying bacon for his own use, with turf, in the true Westmorland fashion. There is also a Mr. Symes, who imports pickled pork from Ireland, and dries it by various methods, so as to imitate in look and flavour the bacon and hams of several of the most noted English counties. The bacon cured at the hog butcheries about

* It is not probable that this prejudice should be well-founded, since upon enquiry, I find, that the hogs fatted at the distilleries fetch the same price, both at the bacon merchant’s and the Victualling-office, as any other.—*J. M.*

† At many farm houses, pork is kept three years in the pickle, and then used; by which method they are always consuming that of the fourth year; at which age it is said the fat is more firm, of better flavour, and wastes less on being boiled, than with less keeping.—*J. M.*

London, is but little inferior to the best. The trade inform me, that in Yorkshire it is the best cured, and in Wiltshire the best cut up, and recommend to each of those districts to adopt the other's method, so as to unite the two excellencies.

For raising a superior breed of hogs, the same method should be resorted to as I have recommended under the sections on horses, cattle, &c.

The largest breed in Britain is supposed to be kept in the neighbourhood of Rudgewick, on the borders of Surrey and Sussex, which feed at two years old to an astonishing weight, even to double or treble the usual weight of hogs at that age. This breed deserves to be extensively known, and the number of them increased in most parts of this island, as they are most likely to pay much more for their feed than other breeds of a smaller size.—See the following letter.

“ SIR,

“ The following are the weights of some of our hogs :
 “ the largest was fatted by Mr. Thomas Ireland, and
 “ killed by John Oulder, at Wisborough-green : *it weighed*
 “ *one hundred and sixteen stone six pounds.* Two more
 “ were fatted by Mr. Ireland, and killed at his house ;
 “ one 93 stone, and one 90 stone. Mr. Edward Ireland,
 “ one 86 stone, and one 80 stone. Mr. Thomas Elliott, one
 “ 97 stone, and one 90 stone ; this had 88lb. in the flea.
 “ Mr. Parkhurst Elliott, one 80 stone ; and Mr. Anthony
 “ Widden, one 99 stone. Mr. Stening, one 85 stone.
 “ Mr. Pryde at Cranley, one last year 91 stone ; and
 “ several more that weighed between 70 and 80 stone,
 “ which we take no notice of. The age of the hogs I
 “ suppose may be about two years old.

“ I am, &c.

“ JAMES PUTTOCK.

“ Rudgewick, Nov. 28th, 1796.”

SECT.

SECT. V.—RABBITS.

THE only rabbit-warren that I know of, in the county, is on Uxbridge-common. In various other parts of the county, indeed, there are enow of them in the fields to be troublesome to the farmers, who take some pains to destroy them ; but in this they have not altogether succeeded.

The soil of this county is rendered too valuable, by its connexion with London, to be profitably employed in the rearing of rabbits ; but in more distant counties, and on very poor, sandy land, I have several times had proof that no other stock could have returned so much money for the scanty herbage on which they fed.

There are many places in and about London, where poor people make the breeding and rearing of tame rabbits a very considerable article of profit. They generally feed them with grains (procured from the small-beer breweries) pollard, cabbage-leaves, parsley, turnip-tops, and the refuse of other vegetables, with now and then a little clover hay, of which they are particularly fond.

When they are of a sufficient age, and in proper condition, they sell them to the poulterers, who supply the tables of their customers with this article of luxury at all seasons of the year, but more particularly when wild or warren rabbits are out of season.

SECT. VI.—POULTRY.

CONSIDERABLE numbers are raised at the country-houses of most men of fortune, and at the houses of many farmers; but more generally on the corn-farms, where they are useful in picking up corn that otherwise would be lost, and also worms and slugs in the fields near the farm-house. On farms employed purely in the growing of hay, they are less common—sometimes none. As in such cases, the mowing ground comes close to the house, there is no pasture, and it is difficult to restrain the poultry from the fields during the growing of the crop, in which they are found to do much mischief. To buy provision for them, would be certain loss.

It is clearly ascertained, that ducks might be kept in such numbers on corn-farms, as to prevent any sensible loss or destruction in their crops by worms, slugs, and caterpillars, and yet we are always hearing of great losses occasioned by those vermin. The support of a hundred or two of ducks on a farm, is a trifling expence, and might be considered in the light of ensuring the young crops against being cut off. It is thought that many a farmer receives more damage to a crop in one season, than would support a sufficient number of ducks to give perfect security for twenty years.

SECT. VII.—PIGEONS.

I DO not recollect more than one dove-house in the county, and yet many are kept. A dozen or more pigeons are very commonly to be met with at a gentleman's villa, in the gable end of a stable, or in an empty wine-pipe set upon

upon a post, fifteen or twenty feet high, which preserves them from vermin, and in some sort from being stolen.— A few are likewise kept by many journeymen-tradesmen, &c. in the character of pigeon-fancyers, in every poor part of London, and in all the other towns and villages in the county, which must make the number in Middlesex very considerable. Their merits, however, in an agricultural view, are very problematical.

SECT. VIII.—BEES.

THERE are no bees of any consequence kept in the county. We rarely see a hive at a farm-house, and perhaps not ten cottages in the county have any. It is lamentable, that these most valuable insects should be so much neglected. They are probably not kept to one-hundredth part so many as they might. Every farmer, and every cottager too, ought to be furnished with a few hives.

If I can trust my own observations, bees are kept in greater numbers in the wild and poor parts of England, than in the well-cultivated and rich districts; but they might, and ought to be found in all. Cottagers might pay their rents from the produce of their bees, which require very little attendance, and less provision. Their whole increase, wax and honey, is very nearly net profit; and they are also supposed to be very serviceable in promoting the increase of beans, peas, &c.

Judging from the great number of hives which I have seen in the gardens of poor people in distant counties, I think it not a very difficult matter for a prudent cottager to raise and keep a stock of bees, whose produce would be nearly equal to his own earnings.

CHAPTER XIV.

RURAL ECONOMY.

SECT. I.—SERVANTS, LABOURERS, HOURS OF
LABOUR.

THE wages most generally paid to ordinary labourers in husbandry in this county, is ten shillings a week during the winter half year, and twelve shillings a week during the summer half year; but on most farms, there is one handy, confidential workman, at twelve shillings a week all the year round. Those who are only employed during hay-time and harvest, are paid fifteen shillings a week; they are occasionally allowed beer, and sometimes a dinner, which makes it equal to their being paid twelve shillings a week the year round.

In summer, the hours of labour are from six o'clock in the morning till six o'clock in the evening; and during the winter months, from light till dark: but half an hour of rest is always allowed at breakfast, and an hour at dinner.

A great deal of labour, perhaps a moiety or more, of the whole, is done by the piece. Here follow some of the prices:

Mowing grass for hay, from 3s. to 6s.—average 4s. per acre.

Mowing, making, stacking and thatching, teams and straw included, per acre 20s.

Mowing

Mowing clover the first crop, 3s. per acre.

Ditto the second crop, 2s. 6d.

Mowing barley and oats, from 2s. 6d. to 3s. 6d.—average 3s.

Hooking peas, from 3s. to 5s.—average 4s.

Ditto, or mowing, tares, 5s.

Reaping oats, 8s.

Bagging wheat and rye, from 10s. to 18s.—average 12s.

Ditto beans, from 6s. to 9s.—average 7s. 6d.

The prices vary according to the bulk of the crop; whether it be standing or lying; and also in proportion to the distance from town. The said prices include the value of the usual allowance of beer, and also the labour of binding the crop into sheaves, and setting them into shocks, which two last operations are done in a very loose slovenly manner. By bagging, the straw is cut more closely to the ground, than is possible to be done by hand-reaping. It is performed in about the same time, and procures as much more straw as is worth about 7s. per acre.

Much thrashing is done by the day; more by the quarter, and some by the truss. These various methods are resorted to in order that the labourer may be well paid, the corn clean thrashed, and pilfering prevented—but without effect.

Oats and barley are thrashed at per quarter 2s.

Beans and peas, at ditto 1s. 6d.

Wheat and rye at ditto 4s. or sometimes at 2d. per truss.

Tares 4s.

Straw of every sort, is weighed and bound at 1s. per load.

Hay is cut, weighed and bound, at from 1s. 8d. to 2s. per load: a quick hand can bind two loads per day in summer.

Turnips

Turnips are hoed the first time, per acre at 7s.

Ditto the the second time, 5s.

Nurserymen are said to have their labour done cheaper than the farmers and gardeners.

The number of *women* (mostly from North Wales) who are employed by the farmers and gardeners round London, during every summer season, in weeding and making hay, in gathering green peas and beans, in picking fruits, and carrying strawberries and other tender fruit to market, is astonishing. Their industry is unequalled in Britain, or perhaps in the world. The fruit-women will labour several hours in the garden, and go to and from the London markets twice a day, though at from four to seven miles distance.

Their ordinary hours of labour are from eight till six, for which they are paid one shilling a day in summer; and from eight till dark for ten-pence in the winter.

Their working so much in the open air, gives them a hale, brown complexion, the sure index of good health: just the reverse of which, are the complexions and health of those women in other counties, whose occupation is knitting, or lace-making.

Fruit is gathered by measure, and carried to London by the journey.

Green-peas are gathered at from 1s. to 1s. 6d. per sack, according to the size of the pods, and the abundance of the crop.

Beans at half the said price.

“ On the whole, it cannot be said that the price of labour is high, for a county in which the metropolis of so great an empire is situated.”

One great grievance which the industrious poor labour under, is, the imposition of *the lowest shop-keepers*, of whom they (the poor) are, from local situation, obliged to

to buy their provision. In the article of vegetables, such dealers *treble the market price*. Another great evil is, that many of this class of shop-keepers also deal in *spirituous liquors, scandal, and bad advice*.

The increasing number of public-houses* is equally to be deplored. There the poor and thoughtless are irresistibly tempted to squander their money, in bad beer and spirits, to the manifest injury of their constitution; whereas a substantial meal at home, with a little good ale, would ensure that health and vigour so essential to persons who must earn their bread by the sweat of their brows.

I cannot here omit to mention, that *the increase of public-houses is, in my opinion, more ruinous to the lowest orders of society than all other evils put together*. The depravity of morals, and the frequent distress, of poor families, if traced to their true source, will be found, mostly, to originate in the public-house. On the contrary, where there is not such a house in the parish (and some such parishes there still are, though in distant counties), the wife and children of the labourer, generally speaking, enjoy happiness, compared with those where many public-houses are seen. They are also less disposed to deceive and pilfer; are better clothed, more cleanly, and less impudent and impertinent in their manners and deportment.

The labourers of this county are ruined in morals and constitution by the public-houses. It is a general rule, that, the higher their wages, the less they carry home, and consequently, the greater is the wretchedness of themselves and their families. Comforts in a cottage are mostly found,

* The number of these houses is wonderfully increased in this county, and in Surrey, by reason of many of the brewers and distillers being in the commission of the peace.—*J. M.*

Public-houses, their pernicious effects on labourers and others—see Gloucester Report, p. 25.

where the man's wages are low, at least so low as to require him to labour six days a week. For instance, a good workman, at nine shillings per week, if advanced to twelve, will spend a day in the week at the ale-house, which reduces his labour to five days, or ten shillings; and as he will spend two shillings in the public-house, it leaves but eight for his family; which is one less than they had when he earned only nine shillings.

If by any means he be put into a situation of earning eighteen shillings in six days, he will get drunk on Sunday and Monday, and go to his work stupid on Tuesday; and, should he be a mechanical journeyman of some genius, who by constant labour could earn twenty-four shillings or thirty shillings per week, as some of them can, he will be drunk half the week, insolent to his employer, and to every person about him.

If his master has business in hand that requires particular dispatch, he will then, more than at any other time, be absent from his work, and his wife and children will experience the extreme of hunger, rags and cold*.

The low *inns on the road sides* are, in general, receiving-houses for the corn, hay, straw, poultry, eggs, &c. which the farmer's men pilfer from their master.

Gentlemen's servants are mostly a bad set, and the great number of them kept in this county, is the means of the rural labourers acquiring a degree of idleness and insolence unknown in places more remote from the metropolis.

The poor children who are brought up on the borders of commons and copses, are accustomed to little labour, but to much idleness and pilfering. Having grown up,

* " If greater wages are given, they will be given for expences in articles
" widely different from the necessities of life—they will be given for the
" encouragement of idleness, and for the increase of the excise revenue.
" Idleness is the root of all evil—articles of excise are the moisture which
" nourishes that root."—*Ruggles*.

and these latter qualities having become a part of their nature, they are then introduced to the farmers as servants of labourers, and very bad ones they make.

The children of small farmers, on the contrary, have the picture of industry, hard labour, and honesty, hourly before them, in the persons of their *parents*, and daily hear the complaints which *they* make against idle and pilfering servants, and comparisons drawn highly in favour of honesty. In this manner honesty and industry become, as it were, a part of the nature of such young folks. The father's property is small, and his means few; he is therefore unable to hire and stock a farm for each of his children; they consequently become servants on large farms, or in gentlemen's families, and in either situation are the most faithful part of such establishments.

" During the American war (says Sir William Pulteney), the interruption given by our cruizers to the trade of that country, and other circumstances, prevented the Americans from procuring supplies of molasses for their distilleries; and a distress was experienced, particularly in harvest time, for the want of rum to mix with water, which was the drink of their labourers.

" It is known that cold water is dangerous, when used by persons heated with labour, or by any severe exercise; and yet it is necessary to supply the waste by perspiration in some mode or other. When rum or wine is added in small quantity to water, it may be used, even if cold, with little danger; it would, however, be safer if a little warm water were mixed.

" Dr. Rush, of America, after making experiments, recommended in a publication, that instead of rum, which could not be had, the labourers in harvest should mix a very small proportion of vinegar with their water.

“ Some years after, in a second publication, he mentioned
“ that the practice had been adopted, and had succeeded
“ even beyond his expectations ; indeed so much so, that
“ in many places vinegar was continued to be used,
“ though rum could easily be had.

“ He accounts for the preference of vinegar to rum
“ in this manner.—Severe labour or exercise excites a de-
“ gree of fever ; and the fever is increased by spirits, or
“ fermented liquor of any sort ; but vinegar, at the same
“ time that it prevents mischief from drinking cold water
“ during the heat and perspiration occasioned by exer-
“ cise, allays the fever ; and the labourers found them-
“ selves more refreshed, and less exhausted at night, when
“ vinegar was used instead of rum.

“ I have forgot the proportion of vinegar, but I think
“ it was not more than a tea-spoonful to half a pint of
“ water.

“ I dare say the works of Dr. Rush may be found in
“ London, from which a more correct account of this
“ very important matter may be extracted.

“ The discovery was not altogether new, for the Romans
“ used vinegar, to mix with water, for the drink of their
“ soldiers.”—*Copied from a MS. paper of Sir William's.*

That quality of water, which produces the ill effects
above described, to persons drinking it cold, when under
violent perspiration, is probably corrected by the addition
of skimmed milk. The labourers in some districts of the
kingdom, during harvest, make use of no other beverage
than milk and water, which is found to allay the fever,
and quench the thirst, much more than beer. At the
same time, the labourers are glad when they can procure
ale or beer, though they confess that they are much sooner
thirsty after drinking either, than they are after drinking
milk and water.

For

For the diet of servants in husbandry, see the following section.

SECT. II.—PROVISIONS,
AND THEIR PRICES.

Bread throughout the county of Middlesex, is at the same price as in the city of London. In the vicinity of the metropolis, every kind of *butcher's meat* is equally dear, or rather more so, than in the London markets. In the more remote parts of the county, and in the market-towns of Uxbridge and Brentford, pork, poultry, eggs, vegetables, and milk, are to be had something under the London market price.

The whole sticking of beef, in 1794, might have been contracted for by the year at 2½d. per lb.; though now (1796) it is advanced to 3½d. per lb. Rump steaks, which were then sold at 8d. are now 10d. per lb. Boiling and roasting pieces of beef, weighed together, which were, at the former period, to be had for 5d. are now 7d. per lb. Mutton is nearly at the same rate as beef. House-lamb is from 1s. to 2s. 6d. per lb. Grass-lamb 1d. per lb. higher than mutton. Veal is 2d. per lb. higher than beef; and pork a halfpenny or penny per lb. higher than veal.

The prices of meat are at the *lowest* from Michaelmas to Christmas; and at the *highest* about March or April.

Vegetables are uncommonly cheap at the first hand, in the markets; but the distance at which the great bulk of the inhabitants reside from the markets, makes it necessary for them to buy these articles of the retailers in their

own neighbourhood, at about three times the original cost*.

The *farmers* of this county live, as they are entitled to do, as well as any other set of men of the same fortune.

The *servants* who are boarded by the farmers, frequently consume more animal food than their masters. There is no certain rule, but perhaps something like the following routine may be near the truth, viz. bread, cheese, and fat pork for breakfast; coarse joints of beef boiled, with cabbages and other vegetables, or meat pyes, meat puddings, &c. for dinner; cold pork, bread and cheese, &c. for supper; and with every meal small beer.

It is evident the expence of such a diet must be very considerable; and the waste which the servants of this county make, is shameful.

This, together with their rude manners, induces most farmers to pay them board-wages, especially as this method greatly lessens the trouble of the mistress, and female servants of the house. They will then eat fat pork, and bread and cheese, three times a day, and drink water; but when the farmer boarded them, the beer, meat, cheese, and indeed every other thing which he provided, was complained of, and said to be inadequate to their services. When they are on board-wages, if, by collusion with a favourite female servant in the house, they can pilfer half their provision, all goes on very well; otherwise, after a sufficient trial, they frequently ask to

* For instance, turnips—an acre of good turnips are sold to the cow-keeper by the farmer for ten guineas, which produces five of their waggon-loads. The same crop produces fifteen market cart-loads, which the farming gardener sells at market for three guineas each, or forty-five guineas for the whole. The retailers, out of this quantity make up as many bunches as, at five-pence each, will produce 135l. Thus the consumers are paying the enormous sum of 135l. for what the farmer sells at ten guineas, and the gardener at forty-five guineas.—*J. M.*

return to their old table again. This request is sometimes acceded to, with respect to a servant who is much regarded, but not so with the rest.

The quantity of *pork* eaten by the labourers of this county is very great, and indeed the quantity of *animal food of all sorts*, which is consumed in Middlesex, is amazing. Even, regard being had to the population, I apprehend it is much more considerable than the average proportion per head of all England.

Suppose a family which consists of six persons, viz. a man, his wife, a female servant, and three children, to be a fair average sample of the better regulated families in the country part of this county, such a family consumes of *animal food* about 4lb. per day; which amounts to thirty stone and a half (of 8lb. each) for each inhabitant per annum*.

The quantity of wheat used, where bread is entirely made of it, as it is in the south of England, and including the other applications of fine flour in pies, puddings, &c. and the waste, is about eight bushels for every inhabitant†.

* In a section on supply and consumption, I have endeavoured to shew, that on an average of the inhabitants of all ages in this county, including the luxurious and wasteful cities of London and Westminster, each consumes near thirty-nine stone of animal food, which costs about 8l.—*J. M.*

† A family of five persons, eating much animal food, consumes seven quartern loaves per week, and as much flour in other purposes, as would make another quartern loaf, which together is equivalent to eight quartern loaves per week. This is a small fraction more than six bushels per annum to each inhabitant. There probably may be one-fifth of the inhabitants who use wheat in the proportion of - - - - - 6 bushels each. And I think there are 2-5ths who use 8 bushels each, or 16 bushels. And 2-5ths more who principally live on bread, and consume 9 bushels each, or - - - - - } 18 bushels.

together 40 bushels:

which sum divided by 5, gives 8 as the average number of bushels of wheat required for each person of all ages and conditions.—*J. M.*

Of potatoes, carrots, turnips, parsnips, cabbages, savoy, cauliflowers, lettuces, &c. I suppose each person to consume about one ton per annum.

The diversity in the consumption of *small beer, ale, and porter*, is astonishing. There are some persons who do not drink malt liquor at all: most people of fortune and fashion use it very sparingly; while great numbers of the lower orders, particularly coal-heavers, anchor-smiths, porters, &c. drink it to great excess; even, it is supposed, to the amount of five hundred or one thousand gallons a year each. Upon the whole, I apprehend the quantity of *malt liquor* consumed in the county, would almost average a hundred gallons per head of all ages and conditions. As to *wine and spirits*, the commissioners of Excise and Customs could furnish an account, the amount of which would astonish the rest of the kingdom.

A scarcity of vegetable food for the fattening of cattle, from whatever cause it may arise, whether from a drouthy summer, or a severe winter, uniformly produces full markets, and a consequent fall in the price of the cattle thus prematurely forced to them. This temporary great supply and low price is, as certainly, quickly followed by a corresponding dearth of fat cattle, and considerable advance in the price of *animal food*. This circumstance, therefore, though it first lowers the price to *below*, and then advances it to *above par*, has a tendency, on the whole, to *augment the prices*; because at such a time, the beasts and sheep are sent to market with much less beef and mutton on their bones than they ought to have. Hence a dry, burning summer, glut the market with cattle less than half fat; four or five months later the markets are very thinly supplied, and then of course the prices rise to an extraordinary height. Every sudden, and great advance in the rate of animal food, may, primarily, be traced

to

to this cause. There are, to be sure, other causes which tend to produce this effect, but they are of slow operation; such as the increasing prosperity and opulence, which enables a greater number of individuals to live on butcher's meat than formerly; while, in the opinion of some people, the present war has greatly increased the number of persons who subsist principally on animal food. But I think that a prosperous peace would have advanced the price much more, by means of general industry, and the consequent increase of wealth.

SECT. III.—FUEL.

Coals are in general use for the fires of this county. The exceptions are only on the north side of it, in cottages and small farm-houses, where the expence of coals, and the carriage of them, induces the use of wood fires.

The quantity of coal brought by sea from the counties of Northumberland and Durham, and consumed in this county, may possibly be about half a million of chaldrons. It is understood that there are upwards of 100,000 chaldrons more brought from the same pits to the port of London, which are consumed in the counties of Surrey, Essex, Kent, Berks and Bucks.

There are no natural appearances in this county, that do in the least indicate coal, and the flatness of the surface is very unfavourable for discovering the strata, by which alone any opinion can be formed, as to the probability of its containing coal, or other minerals.

They, however, may be hidden in the greatest profusion within the bowels of this county forever, if more effectual

trials to discover them, should not be made than have hitherto been, which have not exceeded the depth of the wells.

Coals and other minerals cannot in this, as they do in mountainous countries, lie exposed on the surface, which, aided by well-digging, has been the origin of mining in every country.

It is well known that there are coals under St. Leonard's forest, in Sussex, about thirty-three miles from London ; and I have been told of coal having been found near Cranley, at about the same distance.

A canal following the borders of the river Mole, by Leatherhead and Dorking, and through the flat country by Crawley, would be the certain means of working these mines to the great emolument of every person concerned.

A note in one of the returned Reports says, " I am informed there are coals on Finchley-common, near " Muswell-hill."

CHAPTER XV.

POLITICAL ECONOMY:

AS CONNECTED WITH, OR AFFECTING AGRICULTURE.

SECT. I.—ROADS.

THE turnpike roads in Middlesex bear evident marks of their vicinity to a great city. Scattered villas, and genteel houses, in the manner of a continued, and rather elegant village, are erected on one, or both sides of the roads, for three, five, or seven miles out of London. The foot-paths are thronged with passengers, and the carriage-ways with horses, carts, waggons, chaises, and gentlemen's carriages of every description.

This county is intersected by the three most frequented turnpike roads in the kingdom, namely, the great western road, the great north road, and the eastern, or Harwich road; as also by many others of less note.

Keeping the roads in the most perfect repair, is an object of the highest importance: for, until canals, or inland navigation, become general, the supply of the markets, and the price of every article, will be in some measure proportioned to the state of the roads over which they have to pass in their way to town.

Bad roads require a greater number of horses to draw any given weight over them, than would be necessary for the conveyance of the same weight over good ones; which extra-draught must be paid for by increasing the price of the article to the consumer.

The

The same number of horses which, over *bad roads*, could only bring a scanty supply of the produce of the country from a small distance, will, on *good roads*, convey a more abundant supply, and from greater distances: which will *reduce* the price of the necessaries of life in London, rather *advance* them in distant counties, and have a happy tendency towards *equalizing* the prices between town and country.

To the improvement of the roads (compared with the state they were in forty or fifty years ago), may be attributed the present safe, cheap, and expeditious conveyance in mail-coaches, in which Britain is unequalled. In the variety of construction of public carriages for the conveyance of passengers, London excels all other places.

The rate at which the coaches travel, including all their stoppages, is, for the heavy ones, five miles an hour*; the lighter, six; and mail-coaches seven. The difference is not occasioned so much by swift driving as by the constant going on of the mails, contrasted with the useless number of stoppages made by the other coaches.

In travelling by any of them, the *advertised fare* amounts to about two-thirds of the *entire expence*. The other third consists of a variety of small expences and impositions, under the name of gratuities, which are demanded of the passengers in such a way that they in general submit, in order to avoid being grossly affronted†. The whole expence of this mode of travelling is about six-pence a mile each person. The expence of a post-chaise, which will carry one, two, or three, amounts to about one shil-

* That is, two hundred miles in forty hours, and so of the rest.—*J. M.*

† Mail-coaches are much more free from this charge than the others, though the whole expence of travelling by them is rather higher than the rest.—*J. M.*

ling and six-pence a mile, including hire, turnpikes, postilions, &c.

Most of the *parish highways* in this county, are superior to any other of equal extent, that I have ever seen. They are hard and clean in every sort of weather; so much so, that gentlemen may ride along them, even directly after rain, and scarcely receive a splash.

The *turnpike roads*, on the contrary, are, generally, very bad; although at the toll-gates of this county there is collected a very large sum of money, probably not less than 30,000*l.* a year; which is uselessly expended in sinking wells, erecting pumps, building carts, and hiring horses and men, to keep the dust down, by watering, instead of more wisely scraping it off. By the folly of this practice, the roads are kept many inches deep in mud: whereas, if they were raked and swept clean, winter and summer, there would neither be dust in such quantity as to offend, nor any of the present obstructions. There is now double the draught necessary for conveying every carriage on the roads, along which there is no riding even in boots and horseman's coat, during half of the year. The mud indeed is so very deep all the winter, and so fluid after rain, as to render it unsafe to meet horses, owing to their feet throwing the mud not only over an horseman's clothes, but also into his eyes*.

The turnpike road from Hadley through South Mims, is insufferably bad, and disgraceful to the trustees.

The Edgware road is of the same description. No pains are taken to lay it dry: all is flat, not a tenth part sufficiently scraped: mud four inches deep after every heavy rain in summer, and nine inches all the winter. The fresh gravel is always laid on the slop, consequently

* This is no exaggeration: I have repeatedly experienced the truth of it.
—*J. M.*

the first cart cuts it into ruts, and it remains so all the year round. The only possible means of a carriage getting forward, is by keeping in the ruts. This road has been in this condition for many years, to the great disgrace of the trustees, who seem to forget, that the public have a right to require, that the money which is taken from them at the toll-gates, should be laid out with economy and judgment.

The road from Tyburn through Uxbridge, is supposed to have more broad-wheeled waggons pass over it than any other in the county. Therefore, if broad wheels were advantageous to the roads, this would be in high condition, as it certainly is sufficiently rolled; and it has also the advantage of lying on a bed of gravel. But these, and the present management, are insufficient to keep it in repair.

During the whole of the winter 1797-8, there was but one passable track on this road, and that was less than six feet wide, and was eight inches deep in fluid mud. All the rest of the road was from a foot to eighteen inches deep in adhesive mud.

This track was thronged with waggons (many of them drawn by ten horses, and most of them having broad wheels, even to sixteen inches wide) and farmers' six-inch-wheel carts, which occupied almost the whole of this confined space. It was therefore with great difficulty, and some danger, that horsemen, and light carriages could pass.

The road continued in this infamous condition during the whole winter half year. No exertions were made towards cleansing it, although an expenditure of such a trifle as twenty pounds, in the employment of a *road-scraper*, drawn by one horse, would have effectually kept it clean and dry; and would also have prevented the unnecessary destruction of upwards of three hundred pounds worth of materials,

materials, that were reduced to mud by being soaked and ground, for six months, in water mixed with pounded flints.

The only labourers to be seen on the road, during several succeeding months, were those of a neighbouring gentleman; and they were employed in carting the foot-path into his inclosures.

The tolls taken at the gates amount to a very large sum annually; and, as nothing is done towards keeping the road in repair, an enquiry ought to be instituted, as to what becomes of the money so collected.

I do not mean, in the smallest degree, to insinuate that any of the trustees apply the principal to their own use; but the public have a right to expect that the tolls should be lett for the greatest possible sum, and that the money so raised, should be laid out in such a manner as to render the road clean and comfortable.

The trustees would be better able to effect these purposes, if they were to avoid-committing rash actions, and defending desperate suits at law.

The road from Hyde-park-corner through Brentford and Hounslow, is equally deep in filth.

Notwithstanding His Majesty travels this road several times every week, there are not any exertions made towards keeping it clean in winter. In summer, as much money is laid out in watering the dust down, as would probably, after the first expenditure in preparing the road, and in erecting the necessary machinery for the purpose, be sufficient to make it as clean as the well-kept gravel-walk of a pleasure-ground, by the easy means of flooding the road with water three or four times a year.

The town of Brentford is particularly offensive, and might be avoided by a new road being made on the north side of it.

Highgate

Highgate and Hampstead hills are a tax, of one horse in every team, on the farmers of Finchley and Hendon side of the county, who are obliged to drag every load up either one or other of them. It is deplorable too, that every horse and carriage which has to go as far as Barnet, should still be under the necessity of passing in the worst line possible, up the hill to Highgate: it is the more so, as a level line of road, and of less distance, might be made from Islington, passing a little to the east of Hornsey, by Nightingale-hall, along the borders between Middlesex and Herts, rather to the west of East Barnet, so as to join the present turnpike road near the ten-mile stone. Such a line as this would avoid all the hills in the other road, would consequently be travelled in less time, and with more ease to the cattle.

High hedges and trees adjoining the sides of the roads, keep them constantly deep and filthy; and should not be permitted, even in pleasure-grounds. But they are not only suffered in various parts of the county to grow in the hedges next the road, but to stand on the borders of the road, between the fence and the carriage-way, encroaching on the passage, and dripping over it. Every live hedge adjoining a road ought to be clipped, and no wood allowed higher than four or five feet.*

No plantation ought to be placed so near the roads as to occasion wet and damps, by preventing the sun and wind from having their due effects. Near London, plantations close to, or at only a small distance from the roads, afford a harbour for highwaymen and footpads, until they have a

* In the adjoining county, namely, at Streatham, a very large old elm stands in the center of a turnpike road, and others on each side of it; and, as if this was not sufficient, the road is unnaturally raised, and ill shaped, as if it were intended to complete the nuisance.—*J. M.*

See East York, quarto, p. 25, and the Rev. Bate Dudley's letter, in the Appendix to Vancouver's Essex.—*J. M.*

proper opportunity to rush out on their prey; *and for house-breakers to conceal themselves till the appointed hour; also for every description of thieves to hide their plunder in, till a fit opportunity offers for taking it away.*

It is also proper that every road should be kept so clean that it may, in any season, become dry in a few hours after rain.

The writers on wheel-carriages, usually treat that subject as if the whole draught were occasioned by friction between the box and the axle-tree.

It strikes me, however, in a very different manner; the quantity of friction in all common wheels appears to be of secondary consequence.

It will perhaps throw some light upon the subject, to suppose the wheels, with the nails of the cart-tire sunk flat, or even with the outer surface of the tire, to revolve upon polished granite or marble, and the path for the horses to be a clean road of any firm materials. In such a case, every other obstacle being removed, friction alone remains. So circumstanced, one horse would most probably draw full as much as four can do on the usual roads*. If so, and I have no doubt of the fact, it follows, that *one quarter of the draught is friction, and the other three quarters arise from the obstacles, so common on most of the roads in the south of England, of mud, dust, loose sand, gravel, &c.* Hence it follows, that the greater part of the *obstructions would be removed by a constant attention to keeping the roads clean, and which might be done, as before hinted, by well scraping them both in summer and winter.* If the roads near London were mended with ironstone,

* On the waggon-ways belonging to the coal-works in the north of England, one small horse usually draws a waggon containing 2 tons, 13 cwt. of coal; which is more than four of the same horses could do over the turnpike roads of this county.—*J. M.*

or granite, or even with some kinds of limestone, one good coat of such materials would, in a short time, render them almost impenetrable to wheels *moderately loaded*, and they would suffer but little injury from the grinding of wheels more *heavily burdened*. Consequently the roads made in this manner, would be nearly clean both in summer and winter, and very little scraping be necessary. Every heavy shower would wash them clean, and I am confident that two horses would be able to do all the road work that can be done by four under the present system.

Roads regularly formed, and coated with such materials, almost everlasting in their nature, and provided with a sufficient drainage to convey the water that will, from their construction, so readily run off, *would be clean and pleasant in all seasons*: add to this, a general use of single-horse carts; and road horses would soon, very soon, be reduced to less than one half their present number.

With regard to the expence of procuring granite, &c. (which I would observe, ought to be broken into pieces of about the size of hens' eggs, before it be spread on any road) it cannot be any very serious object in places accommodated with either a salt water, or river navigation, nor to countries where they have had the superior sense to introduce canals; and where the persons concerned are obstinate enough to restrict the introduction of canal navigation, they ought to be compelled, at all events, to make their roads good, and keep them clean; the former can only be done by employing such substances as granite, ironstone, limestone, &c.; and the means I have above specified will ensure the latter.

The great original expence of making such roads, will be sufficiently counterbalanced by their much longer duration,

tion, and the trouble fully compensated by the superior pleasure in travelling over them*.

SECT. II.—RIVERS AND CANALS.

THE river *Thames* is rendered famous by the port of London, in every commercial part of the world; and is navigable, for ships, to London-bridge, and, for barges, along all the southern borders of this county. The *Lea*, on the east, is navigable from the Thames near Blackwall towards Tottenham, about eight miles, where a canal navigation quits that river, and runs nearly parallel to it through the meadows of Tottenham, Edmonton, and Enfield, accommodating the whole eastern border of the county with a water-carriage to Hertford on the north, and London on the south. This canal is generally understood not to be a very profitable concern to its owners, which may easily be accounted for, by its being entirely deficient in side branches, of which it ought to have one to Tottenham, another to Edmonton, and a third to Enfield, in this county. Also one to every town and large village near to either side of it. Possibly, indeed, it ought to be extended to a much greater distance into the country, as the best means of

* For the manner of working granite, and the durability of it, see Dr. Anderson's Report of Aberdeenshire, p. 29, &c.—Dumbarton, p. 9; and let it be remembered what large quantities of it have been used in the paving of London streets, over which, I well know, the draught is less than half what it is on the roads of Middlesex and Surrey.—*J. M.*

accommodating the public, and of enriching the proprietors.

The river *Coln* enters this county on the extreme north-west corner, and on the borders of Hertfordshire, in two or three natural channels, in which manner it gently flows along the west side of the county to near Longford and Colnbrook, where it is subdivided into six branches: the three principal continue their separate courses along the west border of the county, till they join the Thames a short distance west of Staines. A fourth branch winds its way from near Longford, by Staines through Littleton, to the Thames between Shepperton and Sunbury. A fifth branch from near Longford, till it joins the river Cran, near the powder-mills on Hounslow-heath: and a sixth, from near Longford, passes near Stanwell, over Hounslow-heath, through Hanworth, Bushey, and Hampton-court parks. The three last described branches, flow through a large tract of level barley soil, at only from one foot to five below the surface; which might with perfect ease (as far as water and proper levels are concerned) convert all this district into water-meadow.

The river *Brent* rises in Hertfordshire, and winds through the very centre of this county to the Thames at Brentford.

The *Cran*, a small river, again divides the western half of the county nearly in two equal parts.

There are many other rivulets and small streams, all of which are suffered to quit the county without contributing to the support of cattle and man by irrigation.

Sir Hugh Middleton's canal, called the *New River*, takes its rise in a large bason of wholesome water at the foot of a chalk-hill, almost close to the turnpike road between Ware and Hertford, nineteen miles from London, in a
straight

straight line; from which place it winds its way in an extraordinarily circuitous manner, through East Middlesex, and arrives at London after a course of thirty-six miles.

Exclusive of the great quantity of very excellent water which this canal supplies to the inhabitants of London, it also does the same to houses the whole of the way along its borders, and is the chief ornament of this side of the county. It has, by its beauties and use, contributed greatly to increase the value of all landed property adjoining to, or near its borders, which is now mostly occupied by genteel villas, and pleasure-grounds, to the extremity of the county, and in a much greater proportion than any other part of it. It probably has trebled the value of many thousand acres of land, by its inducing wealthy citizens to become purchasers of the ground through which its waters beautifully glide. By enlarging this canal near Ware, so much as to receive most or all of the water which now runs to waste down the river Lea, and gradually reducing it all the way to Islington, and by having proper water-gates to accommodate the occupiers of neighbouring lands, many thousand acres might be irrigated between this canal and the river Lea, which river would be a natural and effectual drain to carry off the surplus water.

The Grand Junction canal, just finished to the extent of this county, from Brentford passes through a rich corn district near Hanwell, Norwood, Harlington, West Drayton, Cowley, Uxbridge and Harefield. It is already of great importance to the lands through which it passes, and particularly to the market of Uxbridge, and will daily increase in its consequence as it ex-

tends, till it reaches Braunston, in a length of ninety miles*.

This

	ft.	in.
* The first lock is at Brentford, and the rise	8	0
The second at half a mile	7	8
The third at half a mile further	7	8
	ft.	in.
these three	23	4
The fourth at three quarters of a mile further	7	8
The fifth adjoining the last	7	8
The sixth ditto	10	0
The seventh ditto	10	0
The eighth ditto	10	0
The ninth ditto	7	8
The last six are placed nearly together, and rise	53	0
The tenth at a quarter of a mile, and rises	7	8
The eleventh very near ditto	7	8
	15	4
The twelfth at Cowley, six miles from the last, and rises	6	0
The thirteenth at Uxbridge, two miles further	5	6
	11	6
The fourteenth at Harefield-moor, and rises	11	0
The total rise in Middlesex is	114	2

Farther on, the locks are placed nearly half a mile distant from each other. Time—eight hours to Uxbridge; and six hours on the return.

Vessels of 70 tons have passed, but 60 is the stated size—drawn by two horses.

From Heston to Cowley, a perfect level, the canal is about 30 feet wide; under the bridges only 15; the path 7.—Slopes and banks from 30 to 80, or about 50 feet on each side: together 137 feet wide. The cut shewed the soil to be a most fertile loam of from one to five feet in depth, on loamy flinty gravel, six or eight feet; then blue strong earth; the timber mostly elm; some oak, mostly pollards.

“ The following tolls are payable on the main line of the canal.

“ Lime and limestone one halfpenny per ton per mile.—Cattle, sheep, swine, and other beast; sand, fuller's-earth, pig-iron, pig-lead, and coal, one penny per ton per mile.—Coke one penny-farthing per ton per mile.—Flint, and other stones, bricks, tiles, slates, ironstone, and all kinds of manure (except lime), three farthings per ton per mile.

“ All

This canal seems to be on a very unnecessarily expensive scale. The quantity of earth that has been dug and barrowed, is immense; it is also left in irregular heaps, and by that means does a great deal of damage to the lands, except in some few parts where it has been left of a regular width. In such places the farmers have sloped it down, ploughed it, and sown it to the top, which in some degree lessens the loss of land. It is as wide again at all other places as at the bridges. Of course, all the boats that can pass under the bridges have room enough to go by each other on the several parts of the canal. The money expended on it, might have been employed so as to have made four canals of equal length, by which the public would have been accommodated four times more than they will be in the present case, and the proprietors might have had about three times as much interest for their money as they will now have. Again, they might have made their canal, for one fourth of the present ex-

" All other goods, wares and merchandize whatsoever, three halfpence per ton per mile.—Fractions of a mile taken for a whole mile.

" In addition to the above, one halfpenny per ton is payable to the company for every article passing from the Thames into the canal, or from the canal into the Thames.

" And a further additional toll of two-pence per ton, is payable to the company for all articles passing upon any part of the varied line of the canal, within the parishes of Abbot's-Langley, King's-Langley, Watford, and Rickmansworth, in the county of Herts.

" When any goods shall pass any lock at times when the water shall not flow over the waste weir above such lock, the company are authorized to take tolls as under.

" Cattle, sheep, swine and other beasts; sand, fuller's-earth, pig-iron, pig-lead, and coke, three halfpence per ton per mile.—Lime and limestone; coal, flint, and other stones; bricks, tiles, slates, ironstone, and all manure (except lime), one penny-farthing per ton per mile.—Besides the tolls of one halfpenny and two-pence per ton, for passing to and from the Thames, or upon the variation line.

" 25th April, 1796."

Bricks are every where ready (being made near the sides of the canal), for supplying its own wants.

penditure, of sufficient dimensions to do an hundred times more business than it has now on hand.

Canals, calculated to navigate much smaller boats than any which have fallen under my observation, even down to ten tons, might be made at a very reduced expence; and after certain leading ones were executed, every man of considerable landed property would find it to be his interest to make a small canal through his estate, at least capable of floating boats of five tons, which would be equally convenient for bringing manure, and to carry away the produce. In all the marsh and fen districts, most of the present sewers would only want a little cleansing to fit them for this purpose.

The extension of canals may become the most powerful means of promoting general cultivation. Good roads are certainly very essential, and I think canals are at least equally so, in an agricultural view. On the best roads, produce and manure can seldom be carried more than ten miles with profit, at the present price of horse-keep: but *if canals were as numerous as roads, corn, hay, manure, &c. could be sent to every part of Britain without using more road than the towing paths, and to ten times the former distance without increasing the expence.*

A general canal scheme, would tend to equalize the price of every article in life more than all other things put together. It would afford the cheapest, the safest, and speediest conveyance of every article that might be too bulky and heavy for stage and mail coaches. The benefits would be universal in this island. The inhabitants of London and its environs would be infinitely more plentifully and cheaply supplied by canals, than by any system of roads whatsoever. The remoter parts of this, and every other county, would be placed more on terms of equality with those that are near, and every other part of
the

the island might reap advantages which may be foreseen, but which are much too great for calculation*.

Canals and irrigation might be made the means of cultivating every inch of this island, except rocky ground and mountain tops, and these ought to be planted †.

I shall only further observe on this head, that of two methods of raising the money for making canals, the one which seems to deserve the preference, is the mode by which turnpike roads are usually provided for, instead of entrusting it to the management of interested companies. The latter method is exceptionable, from its creating a perpetual charge on all goods sent by that conveyance, without regarding the money expended, or the interest it may ultimately produce, which is a very imprudent bargain for the public in this country, where population, trade, manufactures and commerce, are so much upon the increase.

* Since writing the above, I was happy to find that Dr. Smith corroborates my opinion, as follows :

“ Good roads, canals, and navigable rivers, by diminishing the expence of carriage, put the remote parts of the country more nearly upon a level with those in the neighbourhood of the town. They are, upon that account, the greatest of all improvements.”—*Smith's Wealth of Nations*.

† “ The encouragement which has of late been given to the opening new communications through the country, by making navigable canals in different parts of it, tends very considerably to facilitate the improvements of waste lands, and all poor soils, for they introduce abundance of lime, chalk, marl, and manures, to all places through which they run.”

In such a county as Middlesex, the canals are equally beautiful and useful; even the prolonged course of the New River is the means of increasing the beauties of the county.—*J. M.*

It is probable that canal navigations will be improved and extended so as to supply London with milk from more distant places than have yet been thought of for that purpose : it is now brought in carts from distances of two or three miles ; it may then be brought in boats from places of ten or twenty miles.—*J. M.*

For more, and for the best method of making canals, see Dr. Anderson's Report of Aberdeenshire ; and Mr. Fulton's Treatise on Canals.

Had Blackfryar's-bridge been built over the Thames by an interested company, the toll would have continually increased; and would probably by this time have drawn from the public thirty per cent. per annum. But, more wisely, it was built by borrowing money at five per cent. all of which has been paid off by the tolls; and the bridge has been free from impost during the last eight or ten years. In this manner canals ought to be made, and increasing traffic would soon make them free.

Putney and Kew bridges, I believe, have been built by interested companies, are created the freehold of the parties, and of course the tolls are a perpetual charge on the public, and increasing annually. On the other plan, these bridges would have been free many years ago.

SECT. III.—FAIRS.

THERE are about ten fairs held in this county annually, at various places, from the beginning of May till the end of November, for the sale of cattle; six for the hiring of servants; and four or more for the sale of toys.

SECT. IV.—MARKETS.

IN the country part of this county, there are nine weekly markets held, namely, at Barnet on Monday morning; at Southall and Finchley on Wednesday; at Uxbridge, Brentford, Hounslow, and Edgware, on Thursday; at Staines on Friday; and at Enfield on Saturday.

AT Uxbridge-market a great deal of corn is sold, and there is a large public granary over the market-place, for
the

the purpose of depositing it from one week to another.— At Hounslow-market there is a considerable show of fat cattle; such of which as are not disposed of there, are sent on to SMITHFIELD-MARKET, *in the city of London*, which is famous for the sale of bullocks, sheep, lambs, calves and hogs, every Monday; and again, though in a less degree, on Friday. On the latter day there is also a market for ordinary horses.

This is the only public market within the bills of mortality, for the sale of live cattle.

The following is an account of the number of black, or neat cattle, and sheep, annually brought for sale to this market, from the year 1731 to 1795, being 63 years; which I have divided into seven averages of nine years each, namely,

<i>Years.</i>	<i>Cattle.</i>	<i>Sheep.</i>
1732	76,210	514,700
1733	80,169	555,050
1734	78,810	566,910
1735	83,894	590,970
1736	87,606	587,420
1737	89,862	607,330
1738	87,010	589,470
1739	86,787	568,980
1740	84,810	501,020
Average	83,906	564,650
1741	77,714	536,180
1742	79,601	503,260
1743	76,475	468,120
1744	76,648	490,620
1745	74,188	563,990
1746	71,582	620,790
1747	71,150	621,780

Years.

<i>Years.</i>	<i>Cattle.</i>	<i>Sheep.</i>
1748	67,681	610,060
1749	72,706	624,220
Average.	—————74,194	—————559,891
1750	70,765	656,340
1751	69,589	631,890
1752	73,708	642,100
1753	75,252	648,440
1754	70,437	631,350
1755	74,290	647,100
1756	77,257	624,710
1757	82,612	574,960
1758	84,252	550,930
Average	—————75,351	—————623,091
1759	86,439	582,260
1760	88,594	622,210
1761	82,514	666,010
1762	102,831	772,160
1763	80,851	653,110
1764	75,168	556,360
1765	81,630	537,000
1766	75,534	574,790
1767	77,324	574,050
Average	—————83,432	—————615,328
1768	79,660	626,170
1769	82,131	642,910
1770	86,890	649,090
1771	93,573	631,860
1772	89,503	609,540
1773	90,133	609,740
1774	90,419	585,290
1775	93,581	623,950
1776	98,372	671,700
Average	—————89,362	—————627,805

Years.

<i>Years.</i>	<i>Cattle.</i>	<i>Sheep.</i>
1777	93,714	714,870
1778	97,360	658,540
1779	97,352	676,540
1780	102,383	706,850
1781	102,543	743,330
1782	101,176	728,970
1783	101,840	701,610
1784	98,143	616,110
1785	99,057	641,470
Average	———99,285	———687,588
1786	92,270	665,910
1787	94,946	668,570
1788	92,829	679,100
1789	93,269	693,700
1790	103,708	729,660
1791	99,838	729,800
1792	107,263	752,569
1793	116,488	729,810
1794	109,064	717,990
Average	———101,075	———707,456

I have not been able to procure an account of the number brought to Smithfield in 1795 and 6, but I am pretty sure it must be greater than that of the preceding year, on account of the unusual advance in the price of animal food having occasioned a very large quantity of lean cattle to be prematurely sent to market. These have, for the most part, been bought up for the supply of the national Victualling-office.

In the above account it may be seen, that the supply has been advancing with some degree of regularity both in the number of cattle and sheep, during the last forty-five years. The number of cattle now sent to market, is more
by

by 26,881, than it was forty-five years ago; and of sheep 147,565. And as it is a matter of general notoriety, that the cattle and sheep of England have also been gradually and progressively increasing in their individual weight, owing partly to the attention paid of late years to the improvement of the breed, and partly to their being much better fed now than formerly, and indeed much better than they could possibly have been before the introduction of turnips and clover, it is not perhaps an unreasonable, or unfounded conjecture, to suppose that the increase in point of weight, has kept pace with the advance in respect to numbers, during the aforesaid period. If so, it will follow that, including number and weight, the annual increase in forty-five years is, in neat cattle, upwards of 72 per cent. and in sheep near 53. Upon the whole, I think I can safely affirm, that, including all the other supplies of animal food, and considering that they also, as well as cattle and sheep, come to market much better fed, and consequently much increased in weight, above what they were forty-five years ago, the consumption of the metropolis is at this time full one half more than it was then *.

To attempt to state the amount of all the various articles produced from the soil, which are sold in this extensive metropolis, and appropriated to supply the daily wants of the inhabitants, would not only open a field for investigation, far too wide and extensive for the limits of this

* The following is a comparison between the weight of bullocks, &c. as it was one hundred years ago, and as it is at the present time, viz.

	100 Years ago.	Now.
Bullocks, at an average, weighed	370 lbs.	800 lbs.
Calves, ditto	50	140
Sheep, ditto	28	80
Lambs, ditto	18	50

—J. M.
work,

work, but might certainly be done to more advantage, should any one have the spirit to undertake to draw up a particular account of the supply and consumption of London, in all its various branches, such as was given to the world by Mr. Maitland, in his History of London, in the year 1725*.

In this place it may be sufficient for me to state, that the annual consumption of London is somewhere about 110,000 head of neat cattle, and 770,000 sheep; and to add, that any person, possessing some degree of judgment in cattle, and at the same time the desire of looking at a great variety of live stock, cannot perhaps spend a few hours more satisfactorily, than in examining the market at Smithfield. He will there very soon discover, that, *for want of a greater attention to the excellence of breed, both in neat cattle and sheep, a very large proportion of the produce of the soil of Great Britain is wasted in producing bones and offal, instead of meat.* It is indeed astonishing that men, at least in the present day, should with so much difficulty be prevailed on to *breed beef and mutton, in preference to horns, skins and bones.*

Leadenhall-Market—is the greatest in London, for the sale of country-killed meat, and is the only skin and leather market within the bills of mortality.

Newgate-Market—is the second great place for country-killed meat; and at both Leadenhall and Newgate markets, are sold pigs and poultry killed in the country, to-

* My intention was to have dwelt more at large on the markets of London; but my application to the Lord Mayor (Brook Watson, Esq.) and his officers, procured no information: the former affected want of knowledge; and the latter would not furnish any extracts from their books, without a fee, as well as paying the copying clerks.

gether with fresh butter, eggs, &c. to an astonishing amount.

The two last, and many other markets, are held daily.

Smithfield, Newgate, and Leadenhall Markets—supply the butchers round London almost entirely, and to the distance of twelve miles; partly indeed to twenty miles*. It is a general opinion among the butchers, that they can buy live cattle in *Smithfield* cheaper than at any other place. *The cattle exposed for sale at this market, have been drove until they are empty, weary, wasted, and foot sore, and consequently shew to a great disadvantage: so much so, that graziers who have followed their cattle, especially sheep, to Smithfield, frequently do not know their own stock, and when they have been shewn to them, they were shocked at the deteriorated appearance of them. If they should not then be sold and slaughtered, the wasting would continue so much, that it would require several weeks of rich food to raise them to their former fatness.*

The bullocks and sheep drove to the London markets are not only over-heated by the journey, but they are also often most savagely beaten with bludgeons, goaded with darts, and hocked about their legs in the market during perhaps ten hours, and then drove to the slaughter-house (if they have the good luck to escape thieves in the characters of bullock-hunters), and knocked down while their blood is yet in that inflamed state, and their flesh bruised. Such meat must be very detrimental to the health and longevity of man. Much better is that which is killed in the country without

* At Seven Oaks, in Kent, and at Hounslow and Islington, in Middlesex, are sales of fat bullocks a day or two, weekly, before *Smithfield*-market, at which many are sold. But they sink to nothing when compared to the sales at *Smithfield*.—*J. M.*

driving,

driying, when the animal is in full health, and sent to Newgate and Leadenhall in clean and cool packages. If this could be done by all, it would remove a great nuisance from London, would probably improve the health of its inhabitants, and would certainly prevent many, and sometimes fatal accidents.

The Fish-Market—is held every morning at *Billingsgate*, where all the dealers are served very early. First, those who keep shops in various parts of the town; and next, the hawkers, who during the forenoon cry them through every street.

This market receives a considerable portion of its supply of fresh fish by land-carriage, from every distance within the limits of England, and part of Wales. Much is also brought from the sea up the Thames in boats: some even from Norway and Newfoundland, as well as intermediate distances*. The quantity of dried and pickled salmon, of cod, herrings, and shell-fish, is also very great. The whole probably amounts to about one-sixteenth of the beef and mutton.

There is also one *Corn-Market*, and that is held at the Corn-Exchange, in Mark-lane, principally every Monday, but in a less degree every Wednesday and Friday.—I should here have been glad to have subjoined an account of the quantity of grain disposed of in this market; but after repeated solicitations both to the Lord Mayor and his officers, I have not been able to procure such an account, and I am therefore reluctantly obliged to content myself with merely stating that such a market does exist, and at which of course an immense traffic is carried on; but

* Packed in ice.

with

with regard to the extent of such trade, or any other particulars, I must refer my readers to such persons, if there be any such, as are both able and willing to inform them.

The *Coal-Exchange* stands in Thames-street, where the great dealers buy and sell. But the consumers are not permitted to buy here, owing to the dealers having obtained a completely infamous monopoly of the market.

The annual quantity sold is about 600,000 chaldrons*.

There are three public markets for hay and straw in this county, namely, Whitechapel, Smithfield, and St. James's; all of which are held every Tuesday, Thursday and Saturday. London is also in part supplied with the same articles from a market held every Monday, Wednesday, and Friday, in Southwark†.

Hay is all sold by the load of 36 trusses, each truss weighing 56lb. except new hay, which weighs 60lb. till the 4th day of September; and afterwards 56lb. only: by which regulation a load of new hay, till the 4th of September yearly, weighs a ton, and after that day only 18 cwt.

Hay is sold daily in large quantities at the different hay-markets in London, Westminster and Southwark; and a regular book is kept by the clerk of each market, for the inspection of the public, mentioning the names of the

* A chaldron of coals, as delivered to the consumer, is thirty-six heaped bushels, but it is a much larger measure between the ship-owner and the dealer, and even to such consumers as buy five or more chaldrons at a time: an allowance is then made in the term *lagrain*, which increases the chaldron to full forty bushels.—*J. M.*

† The barracks on Hounslow-heath furnish a ready market to the farmers in that neighbourhood for their hay, straw and oats, as well as a fund from which to obtain a supply of manure. In this neighbourhood some farmers sell their hay and straw to jobbers, who take it at the barn door, alter the weight of the trusses, draw it away in their carts, and re-sell it.—*J. M.*

seller, the buyer, the salesman, and the price of each load*.

The best meadow hay is principally bought for the feeding of gentlemen's saddle and coach horses, at from four to six guineas per load.

The more ordinary, by the livery-stable keepers, coachmasters, and retailers, at from three to five guineas.

* This seems to have been intended to secure a fair and honest dealing; but it fails, almost entirely, of effecting so good a purpose. The return is made by the salesman to the clerk of the market, and they generally make it several shillings below what they really sell it for, of which sums they cheat the farmers; for over them the farmers have no other check than the apparent one of going to every buyer to enquire what he gave for such and such loads of hay. *This is impossible to be done; nor would it succeed, were it possible.* But further, the salesmen deliver their accounts at the end of the season to the farmer, one, two, or three loads of hay short of the actual number, which they are enabled to do, by daily sending loads of hay to persons who have bespoke it of them, without suffering it to stop in the market. Thus they defraud the clerk of the market of his fee, as they do not enter these loads in his book, and the farmer is deprived of the evidence of their having sold his hay.—Hence they regularly wrong him of some of these loads: in this case the farmer has no sufficient remedy. *The transaction took place several months back—his carter cannot write; his memory is insufficient; or he has left his place. One or other of these insurmountable difficulties happen nine times in ten. The farmer has no other resource but to submit to the loss of his load or loads of hay. He may change his salesman annually, and be served in the same manner by most, or all of them. Nor is this all, for the salesmen also impose upon the buyers. Hay is generally bought by grooms, ostlers, and servants, who are afterwards to take it in; they receive from the salesmen from two to five shillings per load, for which they allow them either to charge twice the amount in price to their master, or to take it in kind from the number of trusses. Severe as the whole of this note may seem to be, it is fully warranted by facts, well known at the Public-office in Bow-street.*

The conversations which I have had with graziers and butchers, leave no doubt in my mind, of the salesmen in Smithfield being equally censurable: and in the skin-markets they are even much worse. Of the corn-market I have no experience.

The legislature is the only power which is equal to providing a remedy for this evil. I hope such a measure will speedily be put into train by the Board of Agriculture, and perhaps it should be required of the salesmen to be annually licensed and sworn, and likewise that they shall give security for faithfully executing their offices.—J. M.

The hay of rye-grass and clover, mixed, is generally bought by coach-masters, &c. for ordinary draught horses.

Sainfoin and clover-hay is generally bought for the brewers, distillers, and carmen's horses, for the rack, and for cutting it into chaff, at from five to six guineas and a half.

The straw from different kinds of grain brought to the London markets, is sold by the load, which consists of 36 trusses, of 36 lb. each. Wheat straw is generally used in the stables, for bedding of horses.

Rye straw is used by brick-makers, to cover their hacks, by collar-makers, and for packing. Barley straw for packing, and by gardeners. Oat straw is also used for packing, and the winter support of cattle, as saddle-horses in straw-yards, &c. Bean straw serves to litter farm-yards and farmers' stables. Pea straw and tare straw to feed farmers' horses in the stables, and saddle-horses in straw-yards.

There are the same regulations at the different markets with respect to straw as hay, and the price of each sort for some time past, has been from 25s. to 45s. per load of $11\frac{1}{4}$ cwt. and 9 lb.

SECT. V.—COMMERCE.

“ THE ensuing abstract of the imports into, and the exports from, the port of London, is made up from the public accounts for one year, ending the 5th day of January 1795, but differs, with regard to the value, from these accounts; in which the price is estimated on data established many years ago, when the articles of commerce imported and exported were not rated at above half the sum they now fetch, *exclusive* of duty.

“ It is therefore to be understood, that the following estimate is made upon the data of the *present value*, as nearly as it can be ascertained. It exhibits a very astonishing picture of the immense opulence and extent of the commerce of the metropolis; and accounts, in a very satisfactory manner, for the vast resources of the country, which have been manifested in so eminent a degree in the course of the present and former wars.

COMMERCE.

Names of the Countries	Value of Imports into London.			Value of Exports from the Port of London to Foreign Parts.			Names					
	£.	s.	d.	British Manufactures.	Foreign Merchandizes.	£.		s.	d.			
Ireland	-	-	-	2,209,501	3	4	168,687	18	3	914,352	4	4
British West Indies	-	-	-	6,072,117	5	0	2,249,043	13	11	579,453	6	0
Conquered Islands	-	-	-	1,226,064	13	8	260,976	0	11	110,817	18	0
British American Colonies	-	-	-	307,412	13	0	654,842	19	4	251,551	6	2
Guernsey and Jersey	-	-	-	91,936	1	2	12,001	13	10	21,616	16	8
Gibraltar	-	-	-	12,947	16	8	83,473	14	11	69,315	2	8
Honduras Bay	-	-	-	14,696	4	2	2,029	18	11	2,550	16	2
South Fishery	-	-	-	197,680	8	6	21	6	8			
Asia, including East Indies	-	-	-	8,916,950	2	10	3,398,680	1	4	185,190	16	0
Africa	-	-	-	66,013	8	4	90,593	12	9	188,743	16	6
Turkey	-	-	-	641,860	19	2	32,065	12	0	123,776	7	2
Suezights	-	-	-	8,389	14	0						
Carry forward	£.19,765,570	9	10	£.6,952,416	12	10	£.2,447,368	9	8			

COMMERCE.

Names of the Countries.	Value of Imports into London.			Value of Exports from the Port of London to Foreign Parts.			Names
	£.	s.	d.	£.	s.	d.	
Brought forward	19,765,570	9	10	6,953,416	12	10	
Venice	82,107	16	0	6,203	17	11	
Italy	1,215,012	15	0	80,980	18	9	
Spain	1,070,697	18	0	205,096	4	4	
Portugal	644,610	3	8	182,780	6	2	
Madeira	7,479	16	8	27,998	6	10	
Canaries	6,763	19	10	20,116	18	4	
France	130	6	8	3,216	5	3	
Austrian Flanders	137,249	5	0	129,413	9	7	
Holland	1,203,515	3	6	114,458	3	7	
Germany	1,089,307	19	4	1,044,634	18	0	
Prussia	196,657	3	2	54,380	14	0	
Carry forward	£.25,419,102	16	8	£.8,821,696	15	7	
				£.12,565,483	1	4	

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COMMERCE.

Names of the Countries	Value of Imports into London.			Value of Exports from the Port of London to Foreign Parts.		
	£.	s.	d.	British Manufactures.	Foreign Merchandise.	
Brought forward	25,419,102	16	8	8,821,696	15	7
Poland	104,978	10	4	7,022	11	10
Sweden	262,727	3	4	33,845	5	6
Russia	1,269,688	9	6	95,519	8	8
Denmark and Norway	166,366	1	0	147,340	5	11
Greenland	26,753	11	2			
United States of America	811,511	18	8	2,251,280	12	1
Florida	16,239	16	0	38,067	0	3
Foreign West Indies	56,240	2	0	1,767	13	10
Prize Goods	1,572,868	8	8			
	£.29,706,476	17	4	£.11,396,539	13	8
				£.14,208,925	14	6

{ included in the account of each country.

RECAPIT.

RECAPITULATION.

		£.	s.	d.
The aggregate value of goods imported into London in	}			
one year - - - - -		29,706,476	17	4
British Manufactures exported -		£.11,396,539	13	8
Foreign Merchandize do. - - -		14,208,925	14	6
		25,605,465	8	2
Value of goods imported in upwards	}			
of 9000 coasting vessels, averaged		4,500,000	0	0
at 500l. each - - - - -				
Value of goods exported coastways,	}			
in about 7000 vessels, at 1000l.		7,000,000	0	0
each - - - - -				
		11,500,000	0	0
Total amount of property shipped and unshipped in the	}			
river Thames in the course of a year, estimated at		£. 66,811,942	5	6

“ Besides the numerous small inland cargoes of coals, merchandize, grain, malt, flour, and other articles, laden and discharged in the Thames and the river Lea; and also the tackling, apparel, provisions, and stores of above 13,500 ships and vessels (including their repeated voyages), which lade and unlade in the course of a year, estimated at 3,188,100l. more, making in all *seventy millions*.

“ It is calculated that above forty thousand waggons, and other carriages, including their repeated journies, arrive and depart, laden in both instances, with articles of domestic, colonial, and foreign merchandize; occasioning a transit of perhaps (when cattle and provisions sent for the consumption of the inhabitants are included) fifty millions more, making together a sum of *one hundred and twenty millions worth* of property annually moving to or from London.”

“ The resources which can move and keep afloat such a vast commercial system, have never been equalled in any other part of the world. In this port, the amount

has been trebled within the last forty-three years, as it "amounted only to one-third of its present extent in the year 1753, and is now equal to three-fifth parts of the whole trade of England."

The above account and remarks, are extracted from Mr. Colquhoun's valuable book on Police; and do equal credit to his industry and ability.

CORN TRADE.

"The corn trade, both as a manufacture, and an article of commerce, is, of all others, of the greatest importance to the prosperity of the kingdom."

Abundance of grain at home, and at a moderate price, "can only be obtained, and secured, by giving such liberal encouragement to exportation, as may render the raising of corn the favourite object of industry in the kingdom. Thus, instead of purchasing a considerable part of our subsistence from foreign countries, we may, by extending the sale of corn to them, increase the demand; and by cultivating the waste lands, be enabled not only to supply ourselves, but to render our country one of the principal granaries of Europe. It is clear that Great Britain, under proper laws, is capable of increasing her growth of corn to any degree for which demand can be obtained*." This being the case, open the ports for exportation, and the *demand* would be almost unlimited; allow the commons to be cultivated, and the *supply* would be certain.

What greater injury can be done to these kingdoms, than by suffering upwards of twenty-two millions of acres of land to lie uncultivated, and thus to be of less value

* Dirom and Mackie on the Corn Laws—1796.

than if they were sunk beneath the sea*. True policy plainly says, that we should cultivate and bring into use, every capable inch of the island; and by exporting such parts of the produce as would not be wanted for home consumption, increase the riches and commerce of the nation†. On the contrary, the present polity of this country makes it impossible for husbandmen to provide farms for their children to cultivate; which necessarily drives them into trade; checks and represses matrimony, and consequently keeps down the most healthy, vigorous and useful classes of population. It is likewise ultimately the cause of our manufactures being fed, at a very increased price, with the productions of the land of other nations, who are occasionally our enemies, but who have the superior wisdom to raise corn for exportation, and consequently to drain this country of its wealth, to pay them for their labour and profit in raising it.

In a manuscript paper, which I have before me, Sir William Pulteney makes the following observations on the corn laws, viz.

“ Many of the inconveniencies to which we may be often exposed from a deficiency of crops, might be prevented by a very simple alteration of the corn laws, viz. that no exportation should be allowed, either with or without bounty, till the month of April: by which means it would be known what proportion the produce of the former year bore to the consumption, and also the pro-

* If the sea flowed over all the space now occupied by the commons of Britain, it would be of real service to the community, both in convenience as to navigation, and in salubrity in regard to health.—*J. M.*

† “ The complete improvement and cultivation of the country, most certainly is the greatest of all public advantages. Food not only constitutes the principal part of the riches of the world, but it is the abundance of food which gives the principal part of their value to many other sorts of riches.”—*Dr. Smith's Wealth of Nations.*

spect of the ensuing crop. If corn was then wanted abroad, our exportations would always produce greater returns, and all intermediate frauds, as to bounties, would be prevented. At present, we often export on bounty, and are obliged to bring back the same grain a few months after at a high price."

Such precaution, under the present system, would probably have the effect ascribed to it by the worthy baronet; but the commerce of the country, and the raising of corn, would be best promoted by making the foreign *market* as extensive as possible, and by cultivating our waste lands to supply such *increased demand*.

I have subjoined some tables received from the Custom-house, shewing the quantity of corn and flour imported into, and exported from, the port of London; and also for the whole of Britain.

PORT OF LONDON.

An account of the total quantity of wheat, and wheat flour, brought into, and carried from this port, coastways, from the 15th of November 1791, to the 1st of November 1795, distinguishing each year, being from the commencement of the act of the 31st George III. chap. 30, for regulating the importation and exportation of corn.

From Nov. 15, to Dec. 31,	<i>Brought Coastways.</i>		<i>Carried Coastways.</i>	
	Wheat. Qrs. Bush.	Wheat Flour. Qrs. Bush.	Wheat. Qrs. Bush.	Wheat Flour. Qrs. Bush.
1791	37,549 5	16,056 5	2,605 4	1,146 7
1792	266,070 6	111,610 0	22,656 4	8,989 0
1793	230,676 0	109,300 1	33,466 3	3,158 3
1794	220,410 2	130,035 3	43,562 5	10,588 4
Foreign	53,313 0			
From Jan. 1, 1795 to Nov. 1, 1795	99,541 4	94,279 5	31,270 2	8,131 5
Foreign	11,031 2	3,388 0	1,051 0	
Total	918,592 3	464,669 6	134,612 2	32,014 3

Coast-Office, Custom-House, }
Dec. 15, 1795.

GEO. WELSTEAD.

AN ACCOUNT OF THE QUANTITY OF FOREIGN CORN IMPORTED INTO THE PORT
OF LONDON IN THE LAST TEN YEARS.

CORN TRADE.

Years.	Barley.		Beans.		Oats.		Oatmeal.		Peas.		Rye.		Indian.		Wheat.		Flour.		
	Qrs.	Bus.	Qrs.	Bus.	Qrs.	Bus.	Qrs.	Bus.	Qrs.	Bus.	Qrs.	Bus.	Qrs.	Bus.	Qrs.	Bus.	Cwt.	qrs.	lb.
1785—	26,386	7	64	5	169,943	2	27	4	1,734	5	—	—	12	7	1,717	6	2	1	2
86—	11,644	7	0	2	257,034	4	100	0	535	2	550	0	—	—	—	4	69	0	27
87—	2,977	6	67	5	513,332	1	20	0	975	0	—	—	8	6	—	6	4	0	0
88—	920	4	1	3	178,363	6	81	2	978	1	—	—	11	2	—	5	0	3	0
89—	—	—	0	3	139,534	2	669	7	3	0	—	—	10	1	5,908	0	2,097	0	0
1790—	5,370	2	11,019	0	338,485	1	297	4	3,383	4	—	—	7,205	3	67,432	0	17,762	3	15
91—	28,766	0	3,164	7	398,616	7	—	—	1,398	3	1,377	4	8	2	122,024	5	20,266	2	14
92—	56,901	5	849	3	478,343	4	660	5	2,857	3	—	—	14	5	7,065	4	4	1	0
93—	80,515	3	7,787	5	400,591	7	300	0	14,201	3	2,398	7	2	0	190,175	4	55,373	0	9
94—	81,117	7	32,288	1	462,496	7	31	4	34,822	1	5,131	7	1	2	120,242	6	320	0	0
Total	294,601	1	55,243	2	3,127,742	1	2,188	2	60,888	6	9,458	2	7,274	4	514,572	0	95,900	0	11

*Inspector General's Office,
Custom-House, London.*

CORN TRADE.

AN ACCOUNT OF THE QUANTITY OF FOREIGN CORN EXPORTED FROM THE
PORT OF LONDON IN THE LAST TEN YEARS.

Years.	Barley.	Beans.	Oats.	Oatmeal.	Pears.	Rye.	Indian.	Wheat.	Flour.
	Qrs. Bus.	Qrs. Bus.	Qrs. Bus.	Qrs. Bus.	Qrs. Bus.	Qrs. Bus.	Qrs. Bus.	Qrs. Bus.	Cwt. qrs. lb.
1785—	—	—	—	—	—	—	—	—	—
86—	—	42 5	1,005 0	—	700 0	—	—	719 5	69 0 27
87—	550 0	60 0	955 0	—	140 4	—	—	—	—
88—	—	—	190 0	—	40 0	—	—	—	—
89—	—	150 0	565 2	—	25 4	—	—	—	—
1790—	—	851 2	768 0	—	473 4	—	—	—	—
91—	—	743 4	796 4	—	—	83 6	5,496 4	2,538 4	1,594 2 13
92—	500 7	50 0	7,934 6	—	349 6	—	509 0	500 0	5,766 1 5
93—	—	48 5	2,138 6	—	103 4	498 6	—	7,517 5	804 0 14
94—	—	—	466 0	—	137 0	1,095 3	—	9,280 0	100 0 0
Total	1,050 7	1,946 0	14,825 2	—	1,969 6	1,677 7	6,005 4	101,380 7	45,755 3 11

AN ACCOUNT OF THE QUANTITY OF BRITISH CORN EXPORTED FROM THE PORT
OF LONDON IN THE LAST TEN YEARS.

Year.	Barley.	Bent.	Malt.	Oats.	Oatmeal.	Pear.	Rye.	Wheat.	Flour.
	Qtr. Bus.	Qtr. Bus.	Qtr. Bus.	Qtr. Bus.	Qtr. Bus.	Qtr. Bus.	Qtr. Bus.	Qtr. Bus.	Cwt. qtr. lb.
1785—	821 6	4,552 6	677 7	4,346 7	161 2	3,645 5	1,021 4	55,763 7	66,650 2 0
86—	122 7	8,539 6	—	8,342 6	750 6	3,561 2	345 3	78,786 1	115,942 2 0
87—	306 2	8,219 7	39 0	8,569 3	340 0	4,526 1	2,215 6	39,062 7	103,964 0 0
88—	5,163 1	7,987 7	46 2	8,412 6	223 2	2,237 0	2,142 6	18,932 4	40,125 0 0
89—	7,486 7	11,888 0	35 0	9,914 0	377 0	6,882 0	7,031 2	5,101 0	78,464 2 0
1790—	391 5	7,329 3	—	8,404 5	1,819 5	5,800 6	47 4	3 4	60,197 0 0
91—	188 0	6,038 1	28 0	11,552 1	394 1	4,439 0	—	14,198 0	34,632 0 0
92—	880 5	7,340 7	29 0	7,418 2	335 7	3,283 1	924 3	42,783 2	101,899 2 0
93—	304 4	8,265 0	49 0	9,747 1	521 7	3,150 6	—	—	38,758 0 0
94—	308 0	6,005 3	60 4	10,362 1	723 3	2,575 2	28 0	—	29,196 3 0
Total	15,973 5	76,167 0	964 5	87,070 0	5,647 1	40,100 7	13,756 4	254,631 7	669,829 3 0

CORN TRADE.

AN ACCOUNT OF THE QUANTITY OF CORN IMPORTED INTO GREAT BRITAIN FROM THE 5TH OF JANUARY, 1788, TO THE 5TH OF JANUARY, 1795, PARTICULARIZING THE QUANTITIES IN EACH YEAR.

Year.	Barley.		Oats.		Oatmeal.		Rye.		Wheat.		Flour.	
	Qrs.	Bus.	Qrs.	Bus.	Qrs.	Bus.	Qrs.	Bus.	Qrs.	Bus.	Cwt.	qrs. lb.
1788—	11,479	2	381,105	4	34,569	7	14,844	6	142,046	4	26,671	3 14
89—	11,127	7	421,780	4	6,212	4	21,683	3	92,397	7½	60,773	3 17
1790—	29,719	1	703,995	4	32,430	5	56,877	6	200,114	1	67,329	2 12
91—	61,134	3	753,248	4	32,798	7	13,026	7	430,798	0	114,775	3 4
92—	118,526	4	934,907	1	29,009	5	55,593	7	20,201	2	7,756	3 6
93—	147,169	2	699,459	0	9,061	2	24,472	5	429,350	4	213,667	3 20
94—	128,568	3	846,022	6	6,661	4			324,637	2	14,129	0 23
Total	507,724	6	4,740,518	7	150,744	2	185,999	2	1,639,545	4½	505,105	0 22

Inspector General's Office, } N. B. No distinction is made in the Office, of Foreign Corn taken in Enemies' or Neutral
Custom-House, London. } Vessels, from other Corn imported, and the above account contains the im-
 portation from Ireland as well as from all other Countries.

CORN TRADE.

AN ACCOUNT OF THE QUANTITY OF BRITISH CORN EXPORTED FROM GREAT BRITAIN FROM THE 5TH OF JANUARY, 1788, TO THE 5TH OF JANUARY, 1795, PARTICULARIZING THE QUANTITIES IN EACH YEAR, WITH THE AVERAGE PRICES.

Years.	Barley.		Malt.		Oats.		Oatmeal.		Rye.		Wheat.		Flour.		Prices Current.			
	Qrs.	Bus.	Qrs.	Bus.	Qrs.	Bus.	Qrs.	Bus.	Qrs.	Bus.	Qrs.	Bus.	Cwt.	grs.	lb.	L.	s.	d.
1788—	65,229	7	149,567	2	12,364	1	952	4	31,219	7	49,769	1	98,152	2	0	2	5	0
89—	210,950	2	134,375	0	24,933	0	5,801	0	37,432	5	73,189	1	210,689	0	0	5	3	2
1790—	18,846	6	32,063	6	11,560	1	1,279	2	47	4	1,307	0	98,728	2	0	2	13	2
91—	2,394	3	39,195	6	14,594	3	715	7	2,343	0	31,008	2	73,495	0	0	2	7	0
92—	26,744	6	20,020	5	15,040	1	529	4	14,608	3	224,190	4	184,494	0	0	2	2	4
93—	1,341	0	1,933	2	13,807	6	795	0	13	0	12,239	2	81,931	0	0	2	8	4
94—	2,048	7	6,472	4	12,695	7	1,048	1	500	7	24,640	4	111,689	2	0	2	11	4
Total	327,555	7	383,628	1	103,595	3	11,121	2	86,165	2	416,343	6	859,179	2	0			

Inspector General's Office,
Custom-House, London.

CORN TRADE.

AN ACCOUNT OF THE QUANTITY OF FOREIGN CORN EXPORTED FROM GREAT
BRITAIN FROM THE 5TH OF JANUARY, 1788, TO THE 5TH OF JANUARY, 1795.
PARTICULARIZING THE QUANTITIES IN EACH YEAR.

Years.	Barley.	Oats.	Oatmeal.	Rye.	Wheat.	Flour.
	Qrs. Bus.	Qrs. Bus.	Qrs. Bus.	Qrs. Bus.	Qrs. Bus.	Cwt. qn. lb.
1788—	390 3	1,204 1	97 0	2,718 0	11,442 2	1,671 1 17
89—	360 0	2,053 6	194 4	—	10,019 4	12,403 0 13
1790—	55 0	1,428 0	8 0	2,718 0	741 5	12,483 2 18
91—	—	1,005 6	71 6	1,185 0	17,265 7	11,934 3 7
92—	774 5	10,300 2	62 1	1,542 6	26,971 5	11,101 1 14
93—	172 5	2,429 1	1,095 0	498 6	32,626 1	40,322 3 21
94—	775 0	692 0	—	1,418 7	91,632 0	24,023 3 3
Total	2,527 5	19,113 0	1,528 3	7,363 3	190,699 0	113,941 0 19

*Inspector General's Office,
Custom-House, London.*

SECT. VI.—MANUFACTURES.

AGRICULTURE may very properly be considered as the art of manufacturing the soil, and unquestionably ranks the highest in the class of manufactures; since it not only makes a greater return for the labour bestowed, than all the rest put together, but it is also of the first necessity, the demands for its products being urgent and irresistible*.

In this point of view, the seed grain, amounting to about 15s. an acre, may be said to constitute the raw material. When the corn and straw, produced from this seed, are dressed and sent to market, the greater part of it is then fit for consumption, and may be called a finished manufacture. The additional value above 15s. is entirely the produce of labour†, and amounts to about 9l. 5s. an acre, or 1233l. per cent. on the cost of the raw material. Wheat is still further manufactured into bread; but, exclusive of the operations of the miller and the baker, this is certainly not above the average for the produce of the arable land of this county; and some parts of Surrey, Kent, and Essex, yield in the same proportion.

The raw material, on an average of the arable of the whole of South Britain, amounts to about 16s. per acre; which is increased in value by labour, to 5l. or 525l. per cent. Hence the labour bestowed on fifteen millions three hundred thousand acres, produces a return of 64,260,000l. sterling.

* "Any other manufactory may be laid down at pleasure, but agriculture must be supported, as it is the hinge upon which both our lives and actions turn; and the ultimate and only certain resource of the state, both for men and money."—*Dirom on the Corn Laws*.

† At least, in conjunction with the assistance of Nature; but as not one shilling could be procured for the natural products of the world, without the application of labour, the whole may, therefore, be said to be derived from labour.—*J. M.*

The cattle and implements may, in a manufacturing point of view, be deemed the stock : the amount of which, on the *meadow land* in this county, is about 4*l.* an acre, and the produce 10*l.* The labour and profits of stock, therefore, are 150 per cent. On a farm purely *arable* in this county, the said stock would be 5*l.* and the produce 10*l.* or 100 per cent.

There are not any grazing farms in the county; if there were, their stock would be greater, and they would not yield so large an increase.

*The farming capital of South Britain is 5*l.* an acre, or 200 millions; and its annual produce is about 130, that is, 65 per cent.*

I shall hereafter speak of the division of this sum into labour, rent, taxes and profit; and at present shall particularize the annual produce of the soil.

The arable land, as before stated	-	£. 64,260,000
The hop-gardens make returns to the amount of 30 <i>l.</i> an acre, for the produce of labour, or about	- - - - }	1,000,000
Nursery-grounds produce upwards of 65 <i>l.</i> per acre. Deduct the raw material, and the produce of labour will not be less than 60 <i>l.</i> on 10,000 acres, is	- - - - }	600,000
The fruit and kitchen gardens are the most valuable resources for labour, and make the greatest return, probably to upwards of 100 <i>l.</i> per acre, on an average of Great Britain; but I shall only estimate them at that sum on 50,000 acres, is	- - - - }	5,000,000
Carry forward	- - -	£. 70,860,000
		Brought

Brought forward	- -	£. 70,860,000
The grass land and cyder countries, cultivated in South Britain, make re- turns to the amount of 3l. on twenty millions of acres, is	- - - - - }	60,000,000
The commons eight millions, at 1s. 3d. an acre	- - - - - }	500,000
Total	- - - - -	£. 131,360,000

I shall not presume to offer the foregoing statement as one that either is, or can be, made out with accuracy and precision. But, under all the circumstances of the case, I think *I may fairly state the annual agricultural produce of South Britain at one hundred and thirty millions; which must be allowed to surpass all other manufactures that can be brought in competition with it, not only as to the gross amount, but also as to its superior usefulness.*

Further, if we suppose that there are two millions and a half of persons employed in agriculture, their average earnings will be, for men, women and children of all ages, 52l. which is a sum so much exceeding their expences, that it is evident this employment must enrich society: and it is equally clear, that it contributes at once its surplus wealth and population to make up the deficiencies of the other departments both in men and money.

Other manufactures, it must be remarked, cannot support their own population; but, on the contrary, have a tendency greatly to shorten the duration of life. It is therefore to agriculture's healthy sons we must look for a supply to make up the loss experienced in manufactories, in great cities, in commerce, and, above all, in war*.

It

* All the artists, manufacturers, and commercialists of the world, are employed on the produce of the soil, and on that only. The watch-maker and

It would certainly be a vain, and, in some measure, an useless task, to attempt, in a work of this sort, to particularize all the different manufactures carried on in this county; especially as they are so very numerous, and in their nature so various, that to do common justice to the subject, would require more time and ability than I have to bestow on it. I shall therefore only notice three or four modern ones, that are a little out of the common way, without meaning, in the most distant manner, to derogate from the merits of the rest; as they certainly do not stand in need of my panegyric to recommend them.

At Chelsea, there is established a new and beautiful manufacture of painted silk, varnished linen, cloth, paper, &c. for the hangings and furniture of rooms. The paper, silk, leather, &c. are for the most part stamped: some of the pieces are very highly finished by hand. The linen is painted entirely by hand, which operation is performed by girls from eight or nine, to fourteen or fifteen years of age: about forty of such girls, and about sixty other persons, have constant employment at this place.

At the same place (Chelsea) there is a manufactory for artificial stone, fire proof earthen stoves, and crucibles; and filtering stones, for the purpose of clearing water of its impurities.

At the end of Pollard's-row, near the Hackney road, a manufactory is lately established, for making water-proof

and the anchor-smith, the clothier and the lace-maker, the goldsmith and the lapidary, are all, and each of them, equally engaged in one object, namely, that of rendering the productions of the earth subservient to the use and convenience of man. The stock of every warehouse and shop, the furniture of every mansion and cottage; all implements and utensils, may easily be traced to the same origin. Even the books of the scholar, and the ink and quill through whose means he communicates his thoughts to others, are derived from the same source as the material on which the naval and civil architect exercises his ingenuity and skill. The loftiest spire and the smallest needle, are both the effects of labour and skill exercised on the soil.—*J.M.*

flaxen pipe-hose for fire engines, the use of brewers, ships, &c. They are wove tubular, without seams, and made to any length, and of any diameter. This is yet in its infancy, and at present employs but few hands.

A little to the south-east of Colnbrook is a mill, on a large scale, for the dressing of leather, and for boiling glue from the refuse of the leather, which gives employment to a considerable number of persons.

To the foregoing account I shall only add, that it is supposed there are eight thousand watch-makers in this county, whereof seven thousand are resident in the parish of Clerkenwell.

The silk-weavers are probably as many, and are principally inhabitants of Spital-fields, Shoreditch, and Bethnal-green parishes. The poverty and distress of these people at this time (February 1798), are inconceivable; very generally a family in every room, without bedding, furniture or clothes. The few rags on their backs comprize their whole property.

The coach-builders and harness-makers are rather numerous, and have brought their respective works to such a high degree of perfection as far to exceed, in point of elegance, those made at any other place in the world.

DISTILLERIES.

The distilleries, as consuming a considerable quantity of agricultural produce, must be considered as manufactories of much importance.

The following observations on this branch of trade, are copied from a manuscript of Mr. Metcalfe.

“ The corn distillers cannot work without raw grain, as the expence of the tun, with all malt, and the duty thereon, would far exceed the sum which the produce would sell for, and the work would be no better.

“ It

“ It is a mistake to suppose the corn distillers have bottoms to throw away ; there being no such thing. The beer brewers and the *compound* distillers have frequently bottoms to dispose of.

“ The produce in gallons, and the sum afforded to the revenue by the distilleries, in 1795, were as under :

	<i>Names of Distillers.</i>	<i>No. of Gall.</i>	<i>Revenue.</i>		
			£.	s.	d.
1.	Messrs. Hatch -	3,362,739	119,448	5	3
2.	Metcalf	3,201,103	117,691	16	11
3.	Cook -	3,261,638	116,221	11	5
4.	Gosse -	2,394,398	87,428	16	9
5.	Johnson	2,283,984	81,548	10	10
6.	Bush -	2,176,561	79,685	14	3
7.	Hodgson	2,213,311	80,658	14	11
8.	Liptrap	1,738,934	61,410	4	11
9.	Roberts	1,920,391	69,530	5	6
10.	Booth -	1,349,933	48,377	5	8

Total - 23,902,992
equal to 14,228 tons.

London	-	-	-	£.860,000	0	0
Scotland and Bristol	-	-	-	140,000	0	0

Total - - - £.1,000,000 0 0

and many thousand fat hogs, for bacon and pork.”

PORTER BREWERIES.

The following is a comparative statement of the porter brewed by the twelve first London brewers, for the years 1796 and 1797, ending on the 5th of July in each year.

1796.		1797.	
Whitbread	- 202,000	Whitbread	- 192,740
Thrale	- - 137,810	Thrale	- - 141,590
Shum	- - 110,700	Shum	- - 119,820
Hanbury	- 109,170	Hanbury	- 117,180
Felix Calvert	- 97,550	Felix Calvert	- 101,760
Goodwyn	- 97,580	Goodwyn	- 94,750
Meux	- - 103,790	Meux	- - 93,400
John Calvert	- 68,000	John Calvert	- 70,090
Clowes	- - 55,770	Clowes	- - 58,680
Elliot	- - 58,250	Elliot	- - 55,800
Cox and Co.	- 42,110	Cox and Co.	- 46,100
Stevenson	- 45,800	Stevenson	- - 45,810

 SECT. VII.—POOR.

SEE CHAP. IV.—SECT. IV.

 SECT. VIII.—POPULATION.

WHEN it was proposed to build fifty additional churches in London and Westminster, in the reign of Queen Anne, it was thought essential, for the purpose of justifying the measure,

measure, that Parliament should have some account laid before them, of the population of the city of London, in order to ascertain how far the increase of churches might be necessary, and in what parishes it was more particularly called for. The account was delivered, by the prolocutor of the Lower House of Convocation, to the Speaker of the House of Commons, and laid before that house on the 10th of March, 1710.

It is said in the journals, that it relates only to those parishes where additional churches were judged to be most wanted. In this place it may be sufficient to remark, respecting the ecclesiastical part of it, that there existed at that time 28 churches, 18 chapels and tabernacles, 26 presbyterian meeting-houses, 23 anabaptists' meeting-houses, 12 independant meeting-houses, 14 quaker meeting-houses, and 13 French.

<i>Parishes.</i>	<i>Families.</i>	<i>Persons.</i>
St. Andrew, Holborn	- 5000	30,000
St. Anne, Westminster	- 2000	12,000
St. Botolph, Aldgate	- 4100	24,600
St. Botolph, Aldersgate	- 1000	6000
St. Botolph, Bishopsgate	- 1676	10,056
St. Clement Danes	- 1834	11,004
Christ Church, Surrey	- 517	3102
St. Giles, Cripplegate	- 7100	42,600
St. James, Clerkenwell	- 1500	9000
St. Sepulchre's	- 2500	15,000
St. Giles in the fields	- 5800	34,800
St. Martin in the fields	- 4000	at 10 per family, 40,000
St. Mary Magdalen, Bermondsey	- 2000	12,000
Carry forward		250,162
		St.

Brought forward	39,027	250,162
St. Paul's, Shadwell -	2167	13,002
St. John, Wapping -	1250	7500
St. James, Westminster	3000	at 10 per family, 30,000
St. Leonard, Shoreditch	2200	13,200
St. Margaret, Westminster	4000	at 7 per family 28,000
St. Paul, Covent-garden	825	4950
St. George, Southwark -	1250	7500
St. Olave's, Southwark -	2900	17,400
St. Saviour's, Southwark	2334	14,004
St. Mary, Whitechapel	3000	18,000
Poplar and Blackwall -	856	5136
Rotherhithe - - -	917	5502
Deptford - - -	2000	12,000
	65,726	426,356

The seven hamlets in Stepney parish, as under:

Ratcliffe - - -	3560	21,360
Limehouse - - -	1170	7020
Mile-end Old Town -	470	2820
Wapping, Stepney -	3170	19,020
Spital-fields - -	3570	21,420
Bethnal-green - -	1416	8496
Mile-end New Town -	1077	6462
	14,433	86,598
	65,726	426,356
Total - - -	80,159	512,954

The

The foregoing account is extracted from the journals of the House of Commons, vol. xvi. page 542.

A very slight inspection of the number of families in the foregoing list, will be sufficient to convince any one, that the greater part of them have been put down without much attention to accuracy. The number of persons appear to have been computed, for the most part, at six per family; in some places at ten; and they amount, on the whole, to six and four-tenths nearly.

Maitland says, that Sir William Petty, who estimated from the hearth-books in 1685, was of opinion that the number of houses *within the bills of mortality* amounted to 105,315.

It has been said by Dr. D'Avenant, who also formed his estimate from the hearth-books, that in the year 1690, the number of houses *in all Middlesex* were 111,215. This was only 24 years after the fire of London, and several of the houses which had been consumed were not then re-built. A map of London at that time, compared with the present extent of the town, shews that it is nearly double its former magnitude; and it is notorious, that every village near the metropolis has increased its number of houses: notwithstanding all these additional buildings, it will presently appear, that the houses in Middlesex do not, even at this time, exceed the Doctor's number; and that at the time he wrote, they could be little, if any thing, more than 80,000.

Forty-seven years subsequent to this period, namely, in the year 1737, Maitland, by *actual enumeration*, discovered that the number of houses *within the bills of mortality* were 95,968, whereof 80,123 were in the county of Middlesex, which is in the proportion of 90,000 only for the whole county.

The

The four parishes of Mary-le-bonne, Pancras, Chelsea, and Paddington, are said, by Mr. Lysons, to contain 11,890 houses; whereof 10,000 may probably have been built within the last thirty years; and, including the whole county, if I should allow that 10,000 more houses have been erected than have been pulled down, within the last sixty years, it would give me 110,000 as the total number of houses in the county at the present moment.

This opinion is corroborated by the number assessed to the house-tax in 1796, as appears by a note received from the Tax-office the 18th March 1797, namely,

In the city of London	-	-	13,527
Westminster	-	-	17,205
Middlesex	-	-	45,795
Together	-	-	76,527

It is barely necessary to observe, that the number of taxed houses in Middlesex, includes eighteen parishes within the bills of mortality, as particularized in the Appendix, beginning with St. Anne's, Limehouse, and ending with St. Paul's, Shadwell; as well as sixty-two other parishes mentioned in a subsequent part of the same paper.

If to the foregoing number of taxed houses (76,527) we add, for cottages, &c. not paying the tax on account of the poverty of the occupiers, and for farm-houses, royal palaces, &c. &c. 38,263, which is one half the number paying the tax, and which every person who knows much of the county, will readily admit is a very large allowance for the unassessed houses, it yet only makes up 114,790 as the total number of houses in the whole county, and it is hardly possible they should exceed it.

Mr,

Mr. Lysons, from an actual enumeration of several parishes within this county, states the number of houses in these places at 2,339, and the number of inhabitants at 12,995; he thence infers, that, including empty houses, $5\frac{1}{2}$ persons to a house is a fair calculation*.

If therefore we multiply the number of houses 114,790 by $5\frac{1}{2}$, the product is 631,345, to which I would add, that there are probably about 20,000 houses in the metropolis which would average 6 per house, or $\frac{1}{4}$ person above

* The following account will shew, that in places somewhat distant from the metropolis, the number of inhabitants are only five, and in manufacturing districts, five and one-fourth to a house, viz.

		Houses.	Inhabitants.
1.	Royton township, in Oldham, 1793	- 450	2511
2.	Ratcliffe - - - - 1793	- 399	2032
3.	Bury - - - - 1773	- 463	2090
4.	Tildsley township, in Leigh 1793	- 162	976
5.	Harlington - - - - -	- 189	982
6.	Brassington - - - - -	- 130	482
7.	Fenny Bentley - - - - -	- 26	130
8.	Tissington - - - - -	- 44	192
9.	Chesterfield - - - - -	- 801	3626
10.	Ashton-under-line - - - - -	- 941	5097
11.	Bolton - - - - 1773	- 1178	5339
12.	Warrington - - - - -	- 3145	9770
13.	Liverpool - - - - 1773	- 6340	34,407
14.	Manchester - - - - 1788	- 5916	42,821
15.	Sheffield - - - - 1788	- 5874	26,538
		26,058	136,993

In the first eight places mentioned in the foregoing list, the inhabitants are in the proportion of five to a house.

In the seven populous towns last mentioned, they are in the ratio of 5273 to one.

On the whole fifteen parishes and places, they are $5\frac{1}{2}$ to one.

In five places, the houses are 14,059, and the families 18,416.

In nine places, the families are 26,369, and the inhabitants 126,925, or 234,81 to one.

In eight parishes and places, the baptisms are 4652, and the inhabitants 106,206, or one in 22,83.

In the same places, the burials are 3894, or one in 27,274.—*J. M.*

the

the rest of the county: this gives a further addition of 10,000. And still further, if we add for persons in hospitals, infirmaries, prisons, public-offices, &c. &c. 7 or 8000 more, the whole population of the county, on the grounds above laid down, cannot exceed 650,000.

A paper in the Appendix, shews that the annual number of baptisms, on an average of ten years, ending with 1796, in fifty-seven country parishes and places, *within* this county, but *out* of the limits of the bills of mortality, have been 2600. The parishes of Hayes, Heston, Isleworth, Teddington, Twickenham, and Twyford, are a fair specimen of those fifty-seven parishes. Of these, the inhabitants were actually enumerated in the years 1794 and 1795, at which time they amounted to 10,474. The annual baptisms in the same parishes were, on an average of the said ten years, 329 $\frac{7}{10}$ ths, or the inhabitants were to the baptisms, as 31,768 to one. The application of this proportion ($2600 \times 31,768 = 82,597$), will shew that there are 82,597 inhabitants within the aforesaid fifty-seven parishes.

The present annual number of baptisms in Mary-le-bonne, Pancras, Chelsea, Paddington, and the Tower of London, are about 2350*. The population of the said places is probably upwards of twenty-eight times that number, or 66,200. The account will then stand thus:

	Baptisms.	Burials.
* Mary-le-bonne, in 5 years, ending with 1794	- 1693,2	1413,4
Pancras, ditto - - - - -	- 343,	390,
Chelsea, the year 1792 only - - - - -	- 253,	284,
Paddington, in 5 years, ending at 1794 - - - - -	- 36,6	244,6
Tower of London, 10 years, ending with 1796 - - - - -	- 11,9	11,2
	2337,7	2343,2

Since this account was taken, they have increased possibly up to 2350.—J.M.

In

In the aforesaid fifty-seven country parishes	-	82,597
In the said five parishes and places in the envi-	}	66,200
rons of London - - - - -		

In all that part of Middlesex which lies *without* the limits of the bills of mortality, the number of inhabitants is about - - - - - } 148,797

Many writers have, within the last thirty years, undertaken to estimate the number of inhabitants *within* the bills of mortality; but, unfortunately, their several accounts differ so much as from 600,000 to upwards of a million.

Dr. Price published very plausible reasons in support of the opinion, that about one in 20 $\frac{1}{2}$ died annually in London, between the years 1758 and 1769. And, taking the interments at 29,000, it produced him the No. 601,750, as the amount of the whole population *within* the limits of the bills of mortality.

Mr. Wales, in 1771, states them at 625,131. Dr. Fordyce has lately, but evidently without sufficient data, called them a million; and Mr. Colquhoun, still more recently, and with a similar degree of rashness, has asserted that the inhabitants of the metropolis are 1,200,000.

The Rev. John Howlett, after having collected lists of baptisms and burials from a great variety of parishes lying dispersed through most of the English counties, and having satisfactorily proved an increasing population in the kingdom, contrary to the opinion which Dr. Price had supported, about the year 1782 published his account, which stated the number of inhabitants *within* the bills of mortality, to be between 8 and 900,000. But this opinion now appears to have been too hastily adopted, and is in fact entirely unsupportable. Mr. Howlett, therefore, with the candour which always accompanies a liberal and cultivated mind, has, in a letter to me on this subject, acknowledged

ledged that the data on which the reasonings and deductions which appear in his pamphlet in answer to Dr. Price, were founded, are too vague and precarious to be safely depended on; and that he has long been inclined to think that the number of inhabitants *within* the bills have never yet amounted to 700,000.

Since the time that Mr. Howlett published his account, several thousand additional houses have been erected within the bills of mortality; and the town appears to be as fully peopled now as at that period, which certainly indicates a considerable increase in the number of its inhabitants.

The London bills of mortality, on an average of ten years, ending with 1796, give the annual amount of the burials at 19,826; and of the christenings at 18,704; as the following extract will shew:

	<i>Christened.</i>	<i>Buried.</i>		
In 1787	17,508	19,349		
1788	19,559	19,697	of which No. were executed	35
1789	18,163	20,749	ditto	29
1790	18,980	18,038	ditto	38
1791	18,496	18,760	ditto	37
1792	19,348	20,213	ditto	25
1793	19,108	21,749	ditto	25
1794	18,689	19,241	ditto	11
1795	18,361	21,179	ditto	28
1796	18,826	19,288	ditto	32
Total	187,038	198,263		260
Ann. aver.	18,704 *	19,826		29

* There are annually many children born within the limits of the bills of mortality, who are neither christened nor registered; perhaps in number sufficient to account for most of the difference between the christenings and burials.—*J. M.*

Annual average of interments during ten years, from	
1757 to 1768	22,956
Ditto 1786 to 1797	19,826
Decrease in the annual average number in 29 years	3,130

There are, in my opinion, many causes which have operated to produce this decrease; particularly an act of parliament which was passed in the year 1767, at the instance of Mr. Jonas Hanway, which has been the means of preserving the lives of upwards of *two thousand* work-house children, *which number*, previous to the passing of that benevolent act, had annually perished. Again, it is a matter of public notoriety, that the metropolis has continued to improve, in point of ventilation and cleanliness, during the last thirty years. This, together with the advancement that has taken place during that time in medical knowledge, particularly in regard to putrid complaints, and the more general introduction of inoculation for the small-pox, must annually save a great many lives. The fashion of keeping country-houses, and visiting watering-places, for the purpose of sea-bathing, during the hot summer months, which has of late years become pretty general among the higher and middle classes, must also have a considerable tendency to extend the duration of life. Indeed, so powerfully do these causes operate, that, notwithstanding the great increase of buildings and of inhabitants, the number of deaths registered in the bills of mortality has, in twenty-nine years, decreased from 22,956 to 19,826, or 3,130 annually. Consequently, the proportion that the annual number of deaths bears to the living, even as the latter stood in point of numbers in the year 1770, has decreased from 1 in 20 $\frac{1}{2}$ to only 1 in 23 $\frac{1}{2}$.*

* As 22,956 is to 20 $\frac{1}{2}$, so is 19,826 to 17,920, which, subtracted from 20 $\frac{1}{2}$, leaves 2,83-100ths, which, added to 20 $\frac{1}{2}$, equals 23 $\frac{1}{2}$.—*J. M.*

And, including the occupiers of houses erected since the year 1770, the living now rather exceed $24\frac{1}{2}$ times the annual number of burials. Therefore, by multiplying the number of deaths, which are, I apprehend, about 25,600 by $24\frac{6}{10}$ ths, we find that *the total number of inhabitants within the bills of mortality are nearly 630,000.*

The increased number of inhabitants, may be found in the following statement of the probable number of houses erected within the last twenty-eight years, made out from my own observation on the town and its environs during that time:

	Houses.
In the parish of St. George, Southwark, about	2100
Christ-church, Surrey - -	400
St. Mary, Lambeth - -	1000
St. Mary, Newington, Surrey	1000
St. Mary Magdalen, Bermondsey	100
Bedford-square and neighbourhood	500
Islington - - - -	300
Hackney, &c. - - -	100
Stepney, and Ratcliffe-highway	200
And in all the rest of the bills, about	300
Together	6000

Many of these stand in St. George's-fields, and other poor situations, and are very small, which makes it highly probable that the inhabitants of them are only five to a house, or 30,000. By adding this number to 600,000, the population about 1769 or 1770, *we have 630,000, as before, for the total number of persons within the bills at the present moment.*

Another mode of computation, perhaps more completely applicable to the present time, is as follows: in the seven parishes of Stepney, Islington, Lambeth, Bermondsey,

sey, St. Mary Newington, Bethnal-green, and Shadwell, according to Mr. Lysons's account, in his *Environs of London*, the collective annual amount of burials noted in the bills, is 2,982; the number of houses 16,530; and of inhabitants 94,530: that is, in the proportion of *one burial to 31 7-10ths inhabitants*. Now, the annual number of burials *within* the bills of mortality, for ten years, ending with 1796, were, as before stated, 19,826: consequently, supposing the same proportion of burials to the inhabitants to take place throughout the whole limits of the bills, as obtains in the afore-mentioned seven parishes (and there does not appear any reason to render the supposition improbable), *the total present population within the bills, should be 628,484*. This last calculation is founded on suggestions in Mr. Howlett's letter to me.

It remains to be observed, that the bills of mortality comprize ten parishes in the county of Surrey, viz. Christ-church, Lambeth, Bermondsey, Newington, St. George's, St. John's, St. Olave's, St. Saviour's, St. Thomas's, and Rotherhithe, the registered burials of which amounted,

In 1792 to	-	-	-	-	3,972
1793	-	-	-	-	4,066
1794	-	-	-	-	3,863
1795	-	-	-	-	3,959
1796	-	-	-	-	4,239
Total					20,099

which, divided by five, gives the annual average number of interments 4,015.

This number, multiplied by 31 7-10ths shews that the inhabitants of these ten parishes are in number, 127,275.

Deduct this number from 628,484, and the remainder will be 501,209 as the population of so much of the county, as lies *within* the bills of mortality.

To this add the former number of 148,797, stated as the amount of the inhabitants *without* the bills, and we have the sum of 650,000 as the whole population of the county, both *within* and *without* the bills.

I think the agricultural population, on an average of all the cultivated land in England and Wales, is about one inhabitant to little more than thirteen acres*.

The whole population of South Britain, is supposed to be in the proportion of one inhabitant to 4 6-10ths acres of the cultivated ground. Of this county, it is in the proportion of upwards of 3 6-10ths inhabitants to every acre.

Including soldiers, sailors, and the inhabitants of the British isles, the population of Britain is, probably, nothing short of nine millions and a half; and perhaps Ireland increases this number to upwards of eleven and a half.

The following account of the number of inhabitants, and acres, is extracted from so many of the printed County Reports as contained those particulars; to which I have added the proportion which they bear to each other: by which it appears that Middlesex is $14\frac{1}{2}$ times more thickly peopled than an average of the other counties, and on the whole of South Britain, near 20 times.

* The cultivated land is thirty-nine million acres, which, being divided by a bare three million of agricultural inhabitants, gives a fraction more than thirteen acres for each person.—J. M.

<i>Counties.</i>	<i>Inhabitants.</i>	<i>Acres.</i>	<i>Proportion, Towns included.</i>
Durham	80,000	610,000	8 acres to 1 inhabitant.
Derby	125,000	720,640	5 8-10ths do.
Stafford	250,000	780,800	3 1-10th do.
Hereford	90,000	781,440	8 7-10ths do.
Lancashire	425,000	1,129,600	2 6-10ths do.
Kent	200,000	893,600	4 1-half do.
Norfolk	220,000	1,094,400	5 do.
Berks	115,000	436,480	3 3-4ths do.
Essex	320,000	1,240,000	4 do.
Cambridge	83,000	443,300	5 3-10ths do.
Rutland	20,000	105,000	5 2-10ths do.
Huntingdon	50,000	240,000	5 do.
Northampton	167,600	582,400	3 1-half do.
Hants	200,000	1,212,000	6 do.
West Yorkshire	400,000	1,568,000	4 do.
Devonshire	400,000	1,600,000	4 do.
Somersetshire	350,000	1,000,000	3 do.
Dorsetshire	89,000	775,000	8 7-10ths do.
	3,674,600	15,994,100	in the proportion of four 3-10ths acres to 1 inha- bitant.
Middlesex	648,000	179,200	one acre to 3 6-10ths in- habitants.

Population is best promoted by a continuance of peace, and by employing the people in works of agriculture: on the contrary, war, which takes men from domestic life into the army and navy, unquestionably decreases population. It is a declared enemy to the human race.

The laws, whether civil or criminal, being more favourable to the numerous classes of subjects in any one nation, than in the neighbouring kingdoms, will increase the population of the favoured country, at the expence of the others, by migrations.

Commons, by keeping down the quantity of agricultural labour, and the number of farms, deprive mankind of the means of following the most healthy of all employments; and drives them into the more sedentary,

sickly, and short-lived occupations of trade, manufactures and commerce.

These, and other causes, as affecting population, are mentioned in various parts of the work.

CHAPTER XVI.

OBSTACLES TO IMPROVEMENT:

INCLUDING GENERAL OBSERVATIONS ON AGRICULTURAL LEGISLATION AND POLICE.

THE spirited and intelligent agriculturist, whose object is the improvement of the soil he cultivates, has too often so many obstacles thrown in his way, and so many adversaries to contend with, as in the whole to present an insurmountable barrier; which compels him to turn his thoughts from the means of removing them, towards a situation where fewer of them prevail; to land that is inclosed, tithe-free, and of which he can have a lease, drawn in such a manner as to give him an interest in the improvement of the soil. On any less favourable conditions, no sensible man would submit to be a farmer. These situations are seldom to be met with; and, consequently, the fact ought not to excite any surprize, of there being only a small portion of land in Britain, which is cultivated in such a superior manner as to approach perfection.

The most powerful obstacles to improvement, are the very great and general want of agricultural knowledge in the managers of landed estates; the want of ingenuity and dexterity in the rural artificers; the impolicy of withholding well-regulated leases; and the barbarous nature of tithes*. These shackles cramp and paralyze every effort

* An excellent paper on the injurious tendency of tithes, may be seen in the Appendix to Mr. Knight's Treatise on the Culture of the Apple and the Pear.—*J. M.*

which can be made towards the improvement of this science; and so long as the agriculture of this kingdom is compelled to endure them, any considerable improvement of the soil is utterly impracticable.

These, and many other causes, have been already more fully discussed in several of the preceding sections of this work, where they appeared more directly to apply; it is, therefore, unnecessary for me to enlarge in this place; and I shall, for that reason, only make the following additional observations.

Commons.—In Britain, though a country celebrated for enterprize and industry, we have upwards of twenty-two million acres of land called commons, which are, for the most part, absolute nuisances: the greater part of which would be inclosed and cultivated, if the people were not restrained by the positive law of the land. Thus, under the idle pretence of securing a few wretched common-rights, the law operates, in the most effectual manner, to perpetuate the most ruinous consequences, by repressing the amount of the agricultural produce of the country many millions per annum, below what it might otherwise be, thereby compelling us to depend on foreign countries even for provision, though we might with perfect ease raise enough on our own island, even in years of scarcity, to supply all the inhabitants; and, in more favourable years, a very large surplus for exportation.

A candid and dispassionate consideration of the subject, will in a moment convince every unprejudiced mind, that a comparison of the exportation with the importation of every sort of corn, and the present (1796) enormous price of both animal and vegetable food, afford the most ample and satisfactory proof, that the population of the country peremptorily demands that the extensive tracts of barren
wastes

wastes which disgrace the island, should be brought into a state of cultivation and improvement, as the only safe and efficient means of preventing the price of animal food from rising to a still greater height; and as the only method of furnishing the inhabitants of Britain with their breakfast, without sending them across the Atlantic to procure it.

A considerable obstacle in the way of improving waste land, and common arable fields, is the unreasonable expence attending the obtaining acts of parliament to authorize their inclosure. This evil operates very much against applications to parliament for that purpose; prevents the extension of cultivation, and keeps down the agricultural capital.

The Right Honourable the Earl of Berkeley suggests, that the fees received on passing acts of inclosure through both houses of parliament, should be abolished; which would reduce the general expence so much as to make the rest a very small object. The Reverend Dr. Vyse observes upon this suggestion of the noble Earl, that the clerks of parliament have obtained the soliciting of every bill through the two houses; and in every case, the acceleration of the passing of the several acts depends on the address and management of the clerks, who receiving a fee at every step the bill makes in its progress, are excited to exert their ingenuity and industry to obtain this end as soon as possible; which is the means of keeping down the expence that would be incurred by the long attendance of attornies and witnesses. He therefore thinks, that abolishing the fees to clerks, would defeat the intended object, by increasing the expence in the attendance of the above persons, and by rendering the passing of acts for inclosure a very tedious, up-hill business. But as the bringing of unproductive land into a state of cultivation

tion and improvement, is a great national object, he recommends that the expence should be defrayed out of the national purse. With this latter opinion I am inclined to agree; and no one can doubt that the application for local acts to divide and inclose waste lands, would be multiplied in consequence of it.

Among others, *war* is a great obstacle to improvement; for "men, by giving way to pride and passion," rather than consult the peaceable and more likely means of increasing their comforts, "bring on this *dreadful scourge*," which is speedily followed by a general scarcity of money, and not only puts a stop to every improvement, but is ruinous to most enterprizes of a speculative kind.

Water Mills.—These are, in general, obstructions to the great improvements that would otherwise be made by irrigation. In flat wet countries, they materially injure the agricultural produce, by damming the water too high. Besides this, the proprietors of mills universally oppose the introduction of canals, which is throwing one of the most considerable obstacles in the way of agricultural improvement; as nothing tends more towards effecting an increased production from the soil, than a safe, easy, and cheap conveyance of such product to market.

AGRICULTURAL LEGISLATION AND POLICE.

One great hindrance to comfort in a life of agriculture, and which drives liberal minded men, who are always the best friends to improvement, out of the profession, is the want of laws to put a total stop to the receivers of stolen goods. These are the wretches who encourage servants
in

in agriculture, and others, to pilfer, by holding out the lure of buying every article which such servants can bring, without asking them any questions. Most things which are usually produced on a farm, from so small an article as an egg, to hay, straw, and grain of all sorts, are daily stolen, and sold on the sides of every principal road in this county*.

The moral principle of the rural servants and labourers of this county is at so low an ebb, that it is supposed not one in a hundred, or perhaps in five hundred, are honest and faithful to their masters. Their minds have been contaminated, and every honest idea banished, in consequence of being continually assailed by women calling for rags, broken glass, and kitchen-stuff; pretended gypsies, itinerant jews, ballad-singers and show-men, strolling from house to house, pilfering every little article they happen to meet with, and tempting and encouraging servants and labourers to do the same, by offering to purchase every portable article. To these may be added, millers, ostlers, and corn-chandlers, dealers in eggs, butter and poultry, plumbers, blacksmiths, and publicans, chandlers' shops, old iron shops, old clothes shops, and rag shops, low brokers of furniture, and pawnbrokers. These are the persons who principally buy the property stolen from farmers, and are only a part of the nursery of three thousand which have raised such a plentiful crop in and near London, as fully to justify the author of the *Treatise on the Police of the Metropolis*, in stating the number of

* These thefts are carried on daily at every farm, in a small way, seldom exceeding a truss of hay, or a bushel of corn, by one man at one time; and are generally of smaller articles. When one of these fellows is taken in the act of stealing to the amount of a shilling or two, who in his senses would prosecute, at the certain expence of 20l. in money, and loss of time?—J.M.

persons

persons whose pursuits are either criminal, illegal, or immoral, at 115,000*.

The drivers of gentlemen's carriages are entrusted to buy hay, straw and corn for their horses; in the doing of which, they generally cheat their masters of 5s. in each load of hay; of 2s. 6d. in every load of straw; and of 1s. in every quarter of corn. This gives them an interest in the consumption, makes them extremely wasteful, and brings on habits of dishonesty.

The ostlers at the inns on the sides of the roads, purchase stolen hay, straw, corn, eggs, and poultry. The writer of this is informed by a person who kept a horse several weeks at one of these inns, that in attending occasionally to see his horse, he discovered him to be fed with wheat, barley and oats mixed together, and partly in the chaff, which could only happen by the farmers' servants robbing their masters, and selling the corn to the ostler.

The fields near London are never free from men strolling about in pilfering pursuits by day, and committing greater crimes by night. The depredations every Sunday, are astonishingly great. There are not many gardens within five miles of London that escape being visited in a marauding way, very early on a Sunday morning, and the farmers' fields are plundered all day long of fruit, roots, cabbages, pulse and corn. Even the ears of wheat are cut from the sheaves, and carried away in the most

* This certainty of being able to sell stolen property without being detected, has made thieves of most of the labourers in husbandry within this county. It is known and lamented by the common farmers; and also by others, who, having acquired moderate fortunes in London, frequently take a farm to amuse themselves during the latter part of their lives, and who are, almost to a certainty, ruined by their servants. Gentlemen of fortune, who have made agriculture their study, and embarked in it for experiment and amusement, are, generally, so fleeced by their servants, acting under the influence of buyers of stolen goods, as to change the pleasures and amusements of a farm into a torment and loss.—*J. M.*

daring manner in open day, in various ways, but mostly in bags containing about half a bushel each. It has been moderately estimated, that 20,000 bushels of all the various sorts are thus carried off every Sunday morning, and 10,000 more during the other six days of the week; or one million and a half of bushels in a year, which, if valued at so small a sum as six-pence each, would amount to 37,500l.

The occupiers of many thousand acres round London, lose annually in this manner to the amount of much more than 20s. an acre. And all this is done, as it were, under the eye of 270 magistrates, 1000 constables, and upwards of 2500 watchmen and beadles. "Men who are more attentive to their own emoluments, and more desirous of promoting their own interests, than putting a stop to these nefarious practices."

I admit that depredations of this kind are not confined to London: they are certainly committed in a proportionate degree near every city and great town. I have seen upwards of twenty thieves at one time in a ten acre field of turnips, each of whom carried away as many as he could stand under. On another occasion, one man staying longer than several others, stealing pears, was secured and taken before a magistrate, who ordered him to pay the value of the fruit found on him (*viz.* 1s.), which he paid, and was discharged.

A miller near London being questioned as to small parcels of wheat brought to his mill to be ground, by a suspected person, soon after several barns had been robbed, answered, that any explanation on that head would put his mills in danger of being burnt. Well may the *farmers* say "*their property is not protected like that of other men*"—which is the more extraordinary, as all the depredations to which I have confined my observations, are committed

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on the landed interest, and probably amount to 4s. an acre on all the cultivated lands of England, or to eight millions of pounds sterling per annum. Including game and vermin, as mentioned under those heads, the depredations committed on farmers' property amounts to 10s. an acre; or nearly to twenty millions annually *.

It is by the committing of petty crimes that dishonesty begins; but it seldom or never ends without proceeding to enormities. It is a misfortune equally heavy on the poor as on the rich, that every possible difficulty is not created by law to stop *dishonesty* in every stage of its progression; in order to render the lives and property of the rich safe, and both rich and poor comfortable. The smallest transgression should not pass without its immediate and proportionate punishment.

The commission of crimes has spread far and wide, and got to such an height, that “ the vilest and most depraved part of the community are suffered to deprive us of the privilege of travelling upon the highways, or of approaching the capital, or our own dwellings, within this county and Surrey, in any direction, after dark, without danger of being assaulted and robbed, and perhaps wounded or murdered; nor can we lie down to rest, without the dread of having our houses burnt, or broke into; our property invaded, and our lives exposed to imminent danger, before the morning †.”

* The depredations committed on other property in and near London, Mr. Colquhoun estimates at 2,100,000l. a year: including all the rest of England, it is probably five millions, which, added to the sum mentioned in the text, swells the whole amount to the enormous sum of about twenty-five millions a year.—*J. M.*

† Within two or three miles of my own residence, at least one set of farmers' buildings are burnt down every year. Also, a man continued for a year and a half, armed with a gun, to rob at any hour, before he was disturbed by either the inhabitants or the police.—*J. M.*

Surely these abuses call, with an imperious voice, for some remedy: *can agriculture*, or indeed any other branch of business, be expected to *flourish*, while such things are *practised*? If the legislature would but for a moment forget their political squabbles, and personal struggles for power and emolument, and turn their attention to these things, they would find a tremendous torrent of abominable crimes, that must be effectually stopped in its course, or it will inevitably overwhelm every thing that is valuable in society.

The cure for so mighty an evil, would require a law, enjoining every person annually to state in writing, by what means he gains his livelihood, to some tribunal competent to scrutinize the information, and punish the party if it be false.

At the same time should be formed, a *scale of offences*, with a corresponding punishment, beginning at the slightest misdemeanour, and ascending progressively to the highest crime. Such a work might be easily performed; and the benefits which would result from it to society are incalculable.

The crops of the farmer ought to be secured to him, and his fields rendered as free from pilfering trespassers, as are the warehouse and shop of the manufacturer and tradesman.

Next to the making of laws with wisdom, it is absolutely necessary to secure a prompt and perfect execution of them. Without this, the best laws will remain a dead letter. Such is, in fact, the case, in a great measure, with respect to several of the very excellent statutes now in force, that were, no doubt, intended by the legislature to operate as a security to the good and the honest, against the depredations of the dishonest and the vicious; and such indeed would be the case with respect to the laws relative to the public revenue, were it not, that in this latter case
a very

a very proper care has been taken to secure a most exact and scrupulous execution of them. Certainly, however, the safety, comfort, and moral welfare of society, require that the *former* should be enforced with a degree of attention and care, at least as rigid and watchful as the *latter*.

CHAPTER XVII.

MISCELLANEOUS OBSERVATIONS.

SECT. I.—SOCIETIES.

THE ardour for improving arts, and perfecting science, has given birth to many excellent institutions in this county; by means of which the interests of mankind have been eminently promoted, and the sphere of human knowledge very considerably extended. In adverting to these establishments, we cannot fail to discern the astonishing efficacy of opulence and patriotism *united* for the public good; while at the same time we may form a very just ground of confidence, that the same means will still continue to be exerted for the encouragement and support of every subsequent plan which may be offered, tending to promote the same beneficial purposes.

We have already societies for the promotion of most branches of human learning, and for the encouragement of many of the arts; but as it will only be necessary to particularize such as have a more immediate relation to, and connection with, the science of agriculture, I shall confine my attention to the two following, viz. the Society for the Encouragement of Arts, Manufactures, and Commerce, and the Veterinary College, both of which are eminently serviceable to the agricultural world.—The first in order of time, is

THE SOCIETY FOR THE ENCOURAGEMENT OF ARTS,
MANUFACTURES, AND COMMERCE,

Instituted at London in the year 1754, on the most disinterested principles, and actuated by the most liberal and generous motives; its main object being the universal benefit of mankind, though with a very praiseworthy attention to the particular and individual interests of Great Britain. This society has, by its fostering care of, and unwearied attention to, the arts and artists of every description, and by a well-judged and impartial distribution of reward and encouragement to the ingenious and deserving in every country, rendered the most essential services to this kingdom, and bestowed the most permanent blessings on the world in general: and has therefore very justly merited, and no doubt possesses, the thanks and good wishes of every true lover of his country, and every sincere friend to human kind.

The benefits and advantages necessarily flowing from an establishment of this kind, originally founded on principles so eminently calculated, from their general usefulness, to promote the purposes intended, becoming more generally known, by means of the annual publication of a volume, containing some of the more important transactions of the society, have very probably been instrumental in the establishment of most or all of the agricultural societies in the kingdom; and remotely, if not immediately, of the Board of Agriculture itself. From such sources, it is very fair to expect that the most essential blessings will be derived to the inhabitants of this, and every other country.

Among the many objects that arrested the attention, and claimed the notice of this society, we shall not be surprised

prized to find that improvement in the science of *agriculture*, from which so much good must result, should appear to it an object deserving its most serious regard and encouragement; with a view not only to clear away the obstacles which prejudice seemed to throw in the way of improvement in that particular branch of science, but also to call forth that energy and exertion at all times so necessary to the attainment of any particular object which seemed to be less felt by the professors of that art than by those of any other. Accordingly, we find that they directed their early attention conspicuously to *this object*, and extended their premiums and bounties to candidates in this class, rather largely; and very extraordinary effects, in particular instances, were the consequences.

I should perhaps have entered more at large into the particular merits of this society, did I not consider myself in some measure precluded by the very general circulation of the volume before alluded to, which renders it unnecessary for me to enlarge on the subject. Suffice it therefore to say, that the improvements brought about through the means of this society, are incalculable!

The following is a general abstract of the pecuniary and honorary rewards given by this society to candidates in the different classes, from the commencement of the institution to the end of the year 1796.

	£	s.	d.	Medals.		Gold	Pallets.	
				Gold.	Silver		Greater	Lesser.
In Agriculture	3,847	13	0	134	66			
In Chemistry	1,464	0	0	5	4			
In Polite Arts	8,805	3	0	44	64	27	100	69
In Manufactures	2,251	16	0	3	13			
In Mechanics	3,372	6	6	13	33			
In Colonies & Trade	2,785	13	8	18	2			
Miscellaneous	6,247	2	6	20				
Total	£.28,773	14	8	237	182	27	100	69

THE VETERINARY COLLEGE.

The neglected and degraded state of farriery in Britain, had been long seen and regretted by many intelligent persons; but no means were publicly taken to promote the cultivation of this useful branch of knowledge, until the Odiham Agricultural Society, very much to its honour, began to interest itself in the business, in the year 1789, by circulating printed copies of their resolutions, in which it was observed, "That it was much to be lamented that there was not yet in England any establishment adequate to the desired improvement in farriery, by a regular education in that science, on medical and anatomical principles." And in addition to this, they repeated their former* intention, of sending two or more young men to France, to be instructed in that art, as soon as they should be enabled to do so by subscriptions or benefactions for that purpose.

Early in the same year (1789), Mr. Sain Bel, an eminent professor, arrived in this country, and published proposals for giving a course of lectures on the construction of the horse, the diseases of that animal, and the science of farriery in general; and in the following year (1790), he presented to the public a plan for the cultivation and improvement of Veterinary medicine. This plan was transmitted to the Odiham Society, and appearing to them to be calculated more speedily to effect the improvement of farriery, than their intended plan of sending young men to France, their committee held several meetings in London, where they were joined by other gentlemen, and the most advisable means ascertained, of

* This alludes to a resolution which this society had come to the preceding year.

permanently *establishing* the professor's plan. On the 18th February 1791, they resolved, that from that day forward the meeting, or society, should be called the *Veterinary College, London*. Mr. Sain Bel was, very properly, appointed professor to the college; and on the 4th January 1792, he commenced his lectures. There were then four pupils in the college, and the society consisted of 204 members. On the 18th February 1793, the members of the college were increased to 910, and the number of pupils to 14. The number of diseased horses in the infirmary was 50.

At this time, (December 1797) the number of annual subscribers is about 600, and of life subscribers 100; of pupils in the college 32; and of diseased horses in the infirmary 44; but they can accommodate 52. Fifty pupils have been examined and approved of by the medical board.

Such has been the origin and progress, and such is the present state, of this valuable institution.*

As the proper treatment of distempers in horses and other cattle, on true and fixed medical and anatomical principles, is undoubtedly of the highest commercial, as well as domestic importance, it is peculiarly incumbent on the nation to protect and support a Veterinary School*, in which their anatomical construction may be properly ascertained; the diseases to which they are liable, carefully enquired into; and the remedies proper to be applied, systematically taught. Such an institution cannot fail of becoming generally important to the nation, as every part of it will gradually enjoy the advantage of possessing enlightened practitioners, regularly bred to the Veterinary science, on whose skill and attention they may securely rely.

* I mean as a national institution, supported at the general expence; not left, as all works of philanthropy are, to the precarious support of voluntary subscriptions and benefactions.—Since this passage was written, this college has received repeated pecuniary aid from parliament.—J. M.

SECT. II.—HERIOTS.

THE manerial custom of taking, at the death of a copyholder, the best beast, and, in some manors, the best piece of furniture, is a barbarous usage, which ought to be abolished.

A favourite horse, or valuable piece of painting, ought not to become the property of the lord of the manor on the death of his tenant. In justice and decorum, they should go to the executor, whereas, as things now are, they are taken by the lord of the manor, even in cases where there are not effects to pay the debts of the deceased. And in every case, they are taken at a time the most distressing to the parties thus bereaved of their property.

SECT. III.—WEIGHTS AND MEASURES.

AVOIRDUPOISE weights are the only ones used in this county for the produce of the soil. Of butchers' meat, 8lb. are a stone; of potatoes, a bushel is 56lb.—for more, see hay and straw markets, page 416.

The Winchester bushel, containing 2150 42-100ths cubical inches, is in general use.

Wood is sold by the stack, packed 3 feet by 3, and 12 feet long; thus containing 108 cubic feet.

The court leets within this county appoint ale-conners to inspect the weights and measures. Generally, the lower shop-keepers, or publicans, are appointed: these persons have their own business to mind; few of them are furnished with standard weights and measures; they visit the dealers in provision once or twice a year, having
previ-

previously given the beadle a few days notice. The beadle is in fee to let the shop-keepers know the day; he then attends at the time, fully dressed in his heavy great-coat (though in the dog days) his laced hat, and large silver-headed staff, with the best weights and measures he can muster. Each dealer gives them about four-pence or six-pence, which furnishes the officers with a plentiful dinner—and all are honest fellows of course!

People of property, who take any care to guard against imposition, measure and weigh every thing as they receive it, by weights and measures of their own; but the labouring poor have no such conveniences. They use the lowest shops, and are generally cheated by false weights and measures, in every thing but bread and beer. Of the latter, indeed, they are particularly careful to see that they have a full pot. In their bread, they generally have half a pound of water in a loaf more than there ought to be, owing to its being insufficiently baked, to preserve its weight. Over the weights of their cheese, butter, and animal food, they have no kind of check whatever.

Every body knows, that the corn measures of the ostlers do not hold more than half the proper quantity, and that their grain is of the worst quality.

Weights and measures require the assistance of the legislature, to shield mankind against numerous impositions; and I think nothing short of stipendary persons required to try their beams, weights and measures, daily, would be equal to the cure.

SECT. IV.—GLEANING AND PILFERING.

IN the gleaning of corn during the harvest, the first pilfering acts are committed by the children of cottagers. In winter, they gather dead wood from the hedges for firing. Then turnips, and other roots, from the field; fruit from the orchards and gardens, and being further encouraged both by the language and example of the bad people around them, it soon becomes habitual, extends to articles of greater value, engenders the thought of supporting existence by pilfering, in preference to doing it by labour, contaminates the multitude, and makes many commence thieving as a profession.

Mr. Colquhoun says, very truly, that every good man who loves his country, and glories in its prosperity, will speedily perceive that this prosperity can only be of short duration, if public morals are neglected, if no check is given to the growing depravity which prevails, and if measures are not adopted to guard the rising generation against the evil examples to which they are exposed.

SECT. V.—BULLOCK-HUNTING

Is a most infamous practice, repeated every Monday, with some few exceptions, and sometimes on a Friday, through the public streets and roads of London, and its environs, by professed thieves. They make choice of the wildest bullock in a drove, and then enrage the animal by every possible means, till he quits the herd in pursuit of one of the gang. Being singled out, they bid defiance to the drovers and owners, and run him for many hours, exciting

exciting the attention of the public, while the hunters steal every thing they can get at. They terrify the people, and carry off their booty. During the short days of winter, they hunt till it is dark, and then frequently make prize of the bullock. At other times of the year, he is generally recovered by his owner, after much trouble and some expence, but greatly reduced in value, by the excessive heat he has undergone.

This practice still continues to disgrace the police, though some late regulations have rendered it less frequent than before.

SECT. VI.—DOGS.

THIEVES of every description keep dogs, frequently of the bull-dog kind. They discover, and give their master notice, when any person is in the way, who might interrupt him either in committing the theft, or in his carrying off the plunder. Thus all the gypsies, and persons who live in tents under hedges, by an union of begging and thieving, are always accompanied by dogs, many of which are as great thieves as their owners, and are as regularly taught to hunt round cottages and houses of every description, for small articles of clothes, and other things, carrying them to their masters, and hunting with as much avidity as spaniels and pointers after game.

It is obvious, that every man whose labour is insufficient for the support of his family, and who keeps one or more dogs, must do it to assist him during the time he is committing depredations.

The exemption of dogs of the foregoing description, from the lately imposed tax, operates as a license for thieves,

thieves, as they could not carry on their present depredatory system without the assistance of these animals. It also encourages the worrying and destroying of many sheep, and is the principal cause of canine madness.

Useless dogs are the greatest nuisance imaginable. Canine madness has produced so many lamentable effects, that a remedy is loudly called for. The safest remedy would be to reduce the number of dogs. Not one instance in a hundred is made public, of the persons who die by canine madness in Britain. There are some hundreds who thus perish every year. If all such cases were regularly published in the newspapers, or otherwise, they would touch the hearts of the people so very sensibly, as to produce the annihilation of dogs.

The industrious poor ought not to be allowed to expend their earnings on any thing so useless to them as dogs; many there are, whose dogs have cost them the price of a cow. Their saving in dog-keep might, and ought to be, more prudently employed in the keeping of bees, poultry and pigs. With a little management, these things would produce a cow whose milk would feed their children*.

* Since the foregoing sentence was written, Mr. George Barrenger, of Tulsehill farm, Lambeth, has lost upwards of fifty pounds' worth of sheep and swine, that died mad; the effect of having been bitten by a dog. Mr. B. observes, that every fellow who lives in a cellar, a garret, or on a common in a tent, and that does not pay any taxes, can keep a couple of bull-dogs, who occasionally mangle a farmer's stock, while the husbandman is not allowed to keep a dog even for the protection of his family, and cattle, without being taxed for it.—*J. M.*

SECT. VII.—VICTUALLING-HOUSES.

THE number of public-houses *within* that part of the bills of mortality which lie in the county of Middlesex,

are - - - - - 4,621

Ditto in Surrey - - - 943

Total 5,204

public-houses within the whole bills of mortality. There are about as many in this county; as those added for Surrey, are nearly equal to all such parts of this county as lie *out* of the bills of mortality.

The ale and porter sold yearly at such houses, is stated to be 1,132,147 barrels, which, at 3½d. per quart, amounts to - - - - - £.2,311,466

Gin and compounds, three million gallons, at 975,000

Together £.3,286,466

It is supposed that upwards of three millions of this money is expended by the labouring people only; which is upwards of 25l. a family on that description of persons.

“ An ill-regulated public-house is one of the greatest
“ nuisances which can exist in civil society: through this
“ medium crimes are increased in an eminent degree; its
“ poison spreads far and wide. It may truly be said to be
“ a seminary for rearing up rogues and vagabonds.”

Supposing each of those houses to ruin one family every ten years, or one person every two years, it amounts to 2,602 persons annually; and in less than twenty years, the numbers are 50,000: *which number I suppose are now living*

living examples of the great distress brought upon mankind by the victualling-houses of one county only.

Many small country villages can date the commencement of poor-rates from the introduction of public-houses, which corrupt the morals, impair the health, impoverish and reduce the poor to the greatest penury and distress: "they also encourage idleness, promote begging and pilfering, and are the remote cause of murders and executions more or less every year."

SECT. VIII.—VERMIN AND GAME.

ESTIMATE of the damage done by vermin on a farm of two hundred acres, one half of it arable, the other in grass, without sheep-walks.

	£.	s.	d.
Mole-catcher paid by the year one guinea:			
notwithstanding which, they will do damage to			
the amount of half a guinea - - - -	1	11	6
Rat-catcher paid by the year two guineas,			
and they will do damage to the amount of a			
guinea more - - - - -	3	3	0
Mice *, if a vermin-killer be employed, will			
cost as much as for rats, and the remaining			
damage will be as great, namely, three guineas.			
If they are not so destroyed they will do in the			
buildings, corn-stacks, barns and fields, twenty			
pounds worth of damage - - - -	3	3	0
Carry forward - -	£.7	17	6

* In the winter of 1796-7 mice ate the outer bark off the ash and crab in many of my hedge-rows; and, what I had not before observed, there was a mouse track through the centre of a large hay-stack. They had been uncommonly numerous the preceding summer. There was much frost and snow during the winter, and the subsequent year they were not more numerous than usual.—J. M.

Brought

	£. s. d.
Brought forward - - -	7 17 6

Sparrows, and other small birds, employ five boys to keep them off fifty acres of corn: a fortnight at sowing-time, and another at harvest, with powder, rattles, &c. five guineas. They damage thatched buildings all the year; they are also mischievous in the gardens, to the amount of one guinea more. In this county, they quit London, and the other towns, villages and single houses, and attack every corn field in flocks of thousands together. If not kept off by rattles, &c. they would clear whole fields; but under the best management, their damage amounts to upwards of one shilling an acre on the whole farm—I shall only say

6 6 0

The fields must be watched against rooks. The boys employed in keeping off sparrows, will in a great measure keep these off, but I have only taken the estimate on securing fifty acres of corn; the beans, peas and tares on twenty-five acres will be exposed to these three voracious tribes. Jays are particularly destructive to bean crops near harvest time; pigeons are so to tares, both at sowing and at harvest time, and rooks are so to beans at seed time. Twenty-five acres in two fields will require two boys three weeks with rattles, powder, pistols, &c.

2 2 0

Magpies, carrion-crows, ravens, kites, hawks, and dogs: every good farmer would be glad to insure against damage by these creatures at - - - - -

2 2 0

Carry forward - - -	£. 18 7 6
---------------------	-----------

Brought

	£.	s.	d.
Brought forward - - -	18	7	6

Game is supported by feeding on all the farmer's crops: he is not allowed to destroy it if unqualified; and if qualified, it will cost him three guineas for a license, and one guinea in ammunition, and still, damage will be done to the amount of one shilling an acre, or ten pounds. Hunters and shooters are a larger species of vermin, who prey upon game; and on an average of years, damage such a farm to the amount of upwards of ten pounds; together twenty pounds, or two shillings an acre for the article of game * - - - - - 20 0 0

The slug, the turnip fly, the black canker, caterpillar, the black insect which destroys beans, and the yellow maggot which feeds on the ears of wheat, are of numerous families, and not less mischievous than any of the foregoing. They will once in five years, cut off the turnips, and once in ten the clover and tares, and do five shillings an acre damage to the corn crops. These losses on an hundred acres of arable land, amount to twenty pounds a year, but in that sum I shall include damage done by them to the whole farm, and say only 20 0 0

£. 58 7 6

* " And man, and horse, and hound, and horn,

" Destructive sweep the field along,

" While joying o'er the wasted corn

" Fell Famine marks the madd'ning throng."

BURGER.

Thus,

Thus, the amount is upwards of fifty-eight pounds a year, or near six shillings an acre, on the whole quantity of land; which sum will perhaps average the cultivated corn and grass land farms of Britain; and as there are thirty-nine millions of acres, these depredations amount to upwards of ten millions per annum.

SECT. IX.—A SKETCH OF COMPARATIVE
HUSBANDRY.

THE Norfolk farmers have the merit, in common with the farmers of the south and west country downs, of cultivating a small portion of their land in a very superior style; but, as an extensive district, the general cultivation of Norfolk is yet far behind even the *South Downs*, for *there* you are not disgusted with the sight of boggy moors, nor furzy pastures, such as you frequently meet with in Norfolk *. And it is still further

* In Norfolk, the traveller is every where offended with the appearance of the boggy marshes, fens, and (what are provincially called) broads; and by extensive districts of uncultivated upland, clothed with heath and furze; these remnants of the wildness of savage districts. The greater part of these marshy bottoms and fens might be drained completely without the help of machinery, and the rest might be laid dry by the aid of fen mills. I have no doubt but that even some of the broads might be embanked, and reduced to inland navigations, by the system of mill work; and much land might be obtained from the other broads in the same manner.
—J. M.

This county is little visited by strangers, consequently the inns are not prepared for their accommodation. I have not elsewhere met with many instances of being obliged to continue the same chaise and pair of horses for forty-five miles in one day, without the possibility of procuring fresh ones; and this not arising from hurry of business, but from there being only one in the whole distance; and that being engaged at a village wedding, no other could be procured.—J. M.

removed

removed from the *west country* downs, *where*, in addition to the general clean face of the country, the quagmires are converted into luxuriant water-meadow. Even these do not come up to the Leicestershire husbandry, where they do not employ sheep as dung carriers, for the purpose of impoverishing two-thirds of their land in order to enrich the other, but, on the contrary, cultivate the whole, and, by dividing their farms into moderate sized fields, and by raising good hedges, to afford shade from the scorching heat of the sun in the dog days, and shelter from the nipping frosts in winter, have prepared the way for improvement in live stock, in which they have already arrived at a degree of perfection altogether unrivalled; and both soil and cattle are confessedly more highly conditioned than those of any of the foregoing districts.

The Leicestershire husbandman, though standing very high in the scale of perfection, is much exceeded by the very superior management of the meadow and arable farmers, and fruit and kitchen gardeners, of this county; since there is not any land in Middlesex (the commons excepted), from the well protected, and healthy copses at Riselip, to those wonders of their kind, the gardens at the Neat-houses, but what is cultivated, and for the most part, raised to an astonishing degree of fertility.

SECT. X.—SUPPLY AND CONSUMPTION OF SOUTH BRITAIN.

THE excess of the imports, over the exports, of corn, shew clearly, that the annual consumption of this country in that article, has been greater than its produce, on an
average

average of eleven years, ending with 1793, by 587,163 quarters of grain. Since that time, the deficiency has increased, particularly in 1795, when the crop was so very inadequate to the supply, as to occasion a still further demand of 1,177,000 quarters. If we divide this quantity by 11, it will give an annual deficiency of 107,000 quarters, which sum, added to the former, makes the amount of the whole annual deficit 694,163 quarters; and, taking it at three quarters per acre*, the medium produce of land on all sorts of corn, over and above the seed, would require no less than 231,388 acres more than are now in cultivation, to be cropped with corn. To this we must add a proportionate quantity of land for fallow (1-3d of 231,388 or) 77,129 acres, and the like quantity for clover and root crops, makes 385,646 acres. In order to raise corn enough to support the requisite number of horses which would necessarily be employed in cultivating this quantity of land, and also the soil which should produce the horse-corn (the proportionate number of horses being 29,350, and requiring two acres each), 58,700 acres more will be wanting, which, added to the aforesaid 385,646, produces the sum of 444,346 acres as the deficit in arable land only. But then these horses would, as others do, require two acres each of

* The average quantity and price of all sorts of grain, may be thus found, viz.

			£.	s.	d.
Wheat,	2½ acres,	at 2 qrs. per acre, is 5½ qrs. at 46s.	-	12	13 0
Barley and rye,	¾ of an acre, at 3 qrs. per acre, is 2½ do. at 30s.	-	3	7	6
Oats and beans,	2½ acres, at 4 do. - - is 10 do. at 21s.	-	10	10	0
	6 acres	17½ quarters	£.	26	10 6

Divide 17½ quarters by 6 acres, gives a bare 3 quarters per acre; and divide 26l. 10s. 6d. by 17½ quarters, gives a bare 30s. per quarter, *i. e.* 3 quarters at 30s. is a full average of the corn, exclusive of the straw, seed and waste.— For the proportion which the number of acres bear in each sort of grain, see page further on.—*J. M.*

grass and hay, or 58,700 more; which makes the whole deficiency 503,046 acres*: the entire produce of which, both in corn and cattle†, this country is in the practice, most unwisely, of purchasing from other nations, and importing into this kingdom at a most enormous expence. It is therefore evident, that before we can raise our own supplies, under the present (though in some measure improved) state of husbandry, we must inclose and cultivate our commons to at least this extent ||.

SECT. XI.—AN ATTEMPT TO ESTIMATE THE QUANTITY OF ARABLE LAND IN SOUTH BRITAIN;

Deduced from the supposed number of inhabitants, and also the proportion of the *whole* quantity of land occupied by each species of crop. Together with statements of the probable number of horses and sheep; of the quantity, and mode of consumption of animal food, and the various products of the soil; of the weight and value of wool; and of the total amount of agricultural produce.

THE best opinion appears to be, that there are about *eight millions* of inhabitants in South Britain; and that all those who eat wheaten bread, consume annually one quarter, or eight Winchester bushels of wheat each;

* Inclosing such a portion of the commons as would produce this net quantity of culturable ground, would require, for hedge-rows, scite of buildings, farm-yards, roads, ponds, gravel-pits, &c. 57,000 acres, which increases the deficiency to 560,000 acres.—*J. M.*

† Irish bullocks, Flemish horses, &c.

|| This account might be extended to about 700,000 acres, by making a proper allowance for the commons being inferior in point of quality to the average inclosed land.—*J. M.*

which

which includes puddings, pies, confectionary, and every other application of wheat in the article of food: indeed I know this allowance of eight bushels to be nearly correct as to some families. This quantity of wheat is about equivalent to the average net produce of half an acre of land; that is, after deducting seed, loss by vermin, accidents, &c. from the gross produce, the remaining net quantity is sixteen bushels per acre.

Those persons who eat bread made from spring corn and rye, will in like manner require the net product of *half an acre*; as the flour of this sort of grain is so much deficient in quantity, weight and nourishment, as fully to balance the greater number of bushels per acre in the produce: therefore,

	Acres.	
Half an acre each person, is - - - - -	4,000,000	
2dly, <i>Beer</i> —For a family of six persons, of all ages, will require 25 bushels of malt, and as many pounds of hops, annually; which I suppose is about equal to three bushels and a half of barley each person; but as there are many who do not drink malt liquor at all, this would be too large an allowance for all England and Wales: I shall therefore estimate it at three bushels each, which, for the assumed population, is 24 millions of bushels, or three million quarters of barley, and, at three quarters per acre (after allowing four for seed, &c. see barley) is, in acres - - - - -	1,000,000	
<i>Distillers</i> —One-tenth of the last number - - - - -	100,000	
Starch, hair-powder, and other manufactures; loss by vermin, damp, and casualties, the produce of - - - - -	80,000	
Corn consumed by oxen, sheep, hogs, poultry, rabbits, &c. - - - - -	40,000	
<i>Horses</i> —Consume corn to the amount of the produce of from one and a half to three acres each, or on the average two acres.		
	<i>Horses.</i>	
Arable land employs about one horse to every fifteen acres, which, on 14,000,000 acres, is - - - - -	933,333	
Grass land employs one horse to every 100 acres, which, on 21,300,000, is - - - - -	213,000	
Number of horses used in agriculture - - - - -	1,146,333	
Horses kept for pleasure, and taxed - - - - -	200,000	
Ditto - - - but not entered - - - - -	40,000	
Post-chaise horses, mail-coach horses, stage-coach horses, hackney-coach horses, &c. supposed to be about - - - - -	90,000	
Carry forward - - - - -	330,000	1,146,333
		5,220,000
H h 2		Brought

	Horses.	Acres.
Brought forward	330,000	1,146,333
Horses used in waggons and carts, in mills, canals, and navigable rivers; in caravans, and for all the other purposes of draught not before described	240,000	
Cavalry, of all the various descriptions	30,000	
Number of horses not used in agriculture proper	600,000	
Total number of horses	1,746,333*	
Which, at 2 acres each, will consume the produce, of } arable land,	3,492,666	
Colts, though too young for labour, are allowed a little corn, which I shall suppose to be as much as the produce of about	65,334	
Total quantity of land producing horse-corn	3,558,000	
Land cropped with turnips, carrots, parsnips, cabbages and potatoes, coriander seed for the brewers and druggists, canary seed for birds, and with dyers, physical and culinary herbs; cultivated by the plough	1,400,000	
Clovers, vye-grass, &c. one year's ley, in the proportion of 1-10th	1,400,000	
Fallow—In the proportion of 2-10ths	2,800,000	
The consumption of the country requires in aration	14,378,000	
But we import corn proportionate to the produce of upwards of	378,000	
Which deducted from the foregoing number, leaves the quantity of arable land in South Britain rather under	14,000,000	

In order to discover the quantity of land cropped with each species of grain, I shall adopt the following *hypothesis*, founded on my own observations, made in most of the counties in England, viz. that, including the common arable fields, 6-10ths of all the arable land in South Britain is cultivated under the old system of wheat, spring corn, fallow: 3-10ths is in something like the rotation of wheat, turnips, spring corn, clover: and the remaining 1-10th is in a course of oats, roots, clover.

* The commissioners for taxes could probably give a more correct account of the number of horses.—Y. M.

First position, 6-10ths divided by 3—fallow 2—wheat 2—oats & beans 2	Total. 6
Second position, 3-10ths divided by 4—wheat 0,75—barley and rye 0,75	} 3
—roots 0,75—clover 0,75	
Third position, 1-10th divided by 3—oats and beans 0,5—roots 0,25—	} 1
clover 0,25	
General proportion—fallow 2—wheat 2,75—oats and beans 2,5—barley	} 10
and rye 0,75—roots 1—clover 1	

According to this statement, every ten million acres of arable land is cropped in the following proportions, viz.

Wheat	- - - - -	2,750,000 acres,
Oats and beans	- - - - -	2,500,000
Barley and rye	- - - - -	750,000
Roots	- - - - -	1,000,000
Clover	- - - - -	1,000,000
Fallow	- - - - -	2,000,000

Total	<u>10,000,000 acres.</u>
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By which also it appears, that the corn-crops, including beans, are in the proportion of six to ten; the green crops in that of two to ten; and the fallow, of two to ten.

Having before shewn that there is at most fourteen millions of acres of land in aration in South Britain, we must, in order to discover the quantity of land annually cropped with each species of grain, &c. apply the foregoing postulatam; and say as 10 is to 2,75, so is 14 to 3,850,000 acres of wheat; and as 10 is to 0,75, so is 14 to 1,050,000 acres of barley and rye; and so of the rest.

Which shews that the soil of England and Wales is annually cropped with the following quantities of each kind of grain, &c. thus:

Wheat	- - - - -	3,850,000 acres.
Barley and rye	- - - - -	1,050,000

Carry forward	- -	<u>4,900,000 acres.</u>
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H h 3

Brought

	<i>Acres.</i>
Brought forward - - -	4,900,000
Oats and beans - - - -	3,500,000
Clover, rye-grass, &c. 1 year's ley	1,400,000
Turnips and other roots, as aforesaid	1,400,000
	11,200,000
Fallow, as aforesaid - - -	2,800,000
Together - - -	14,000,000
Hop-grounds—On the supposition that ten million of inhabitants in Britain and Ireland use 3lb. each, and that rather under 6 cwt. is the average produce per acre, the total quantity would be 264,000 cwt. or -	44,000
Nursery-grounds about - - - -	10,000
Fruit and kitchen-gardens cultivated by the spade - - - - -	50,000
Pleasure-grounds—The dressed and unprofit- able parts only: the rest being either pas- tured by cattle, or mown for hay -	20,000
	14,124,000
Land depastured by cattle; leys of more than one year; meadow of natural grasses, meadow of sown grasses, and water-mea- dow and orchards on grass land, which includes the cyder countries *, -	21,300,000
Hedge-rows, copses, and woods - - -	2,000,000
Ways, waters, &c. - - - - -	1,603,000
<i>Cultivated land in England and Wales</i>	39,027,000
Carry forward - - - -	39,027,000

* This quantity of grass land includes parks, paddocks and pleasure-grounds, that are either mown for hay or grazed by cattle.—*J. M.*

Brought

	<i>Acres.</i>
Brought forward - - -	39,027,000
Commons and waste lands, as mentioned in Sir John Sinclair's Address to the Board of Agriculture - - - - -	7,889,000
Total in England and Wales -	<u>46,916,000</u>

Horse food equivalent to	acres.
1,746,333 horses, at four	6,985,332
acres each, is - - -	
Ditto colts, under the age of	
labour, and horses past labour, }	514,668
	<u>7,500,000</u>
Fallows - - - - -	2,800,000
Ways and water - - - - -	1,603,000
Pleasure-grounds - - - - -	20,000
Manufactories, vermin, damp, must, &c. -	80,000
Nursery-grounds - - - - -	10,000
Hedge-rows, copses, woods - - - - -	2,000,000
Druggists, physical herbs, roots, &c. -	10,000
	<u>14,023,000</u>
Commons - - - - -	7,889,000
Together - - -	<u>21,912,000</u>

to be taken from 46,916,000 acres, the quantity of land in England and Wales, leaves 25,004,000, whereof the produce is consumed by human beings in the proportion of 3 1-8th acres each. By attending to the preceding part of this account, it will appear that it is divided in the following proportions, namely, for bread $\frac{1}{2}$ an acre; for liquids $\frac{1}{8}$ th of an acre; for animal food, near $2\frac{1}{2}$ acres; and for roots, greens, and fruit 1-50th of an acre. Should

the commons be included in the quantity for supplying animal food, they would increase that part of the account to 3 48-100 acres.

No person will expect any of these quantities to be mathematically true, particularly as we have no maps of England that can be depended on, for the purpose of ascertaining the quantity of land, not even, perhaps, nearer than eight in ten of the actual quantity. This sort of calculation is only meant to furnish the mind with some general ideas respecting England and Wales.

There are annually sold at Smithfield-market, about 100,000 bullocks and 700,000 sheep. There are many sold at several of the towns and large villages near London, of which no account is taken, perhaps equal to the supply of Southwark, and all the places out of this county that lie within five or ten miles of town, consequently the inhabitants of this county consume nearly as much animal food as is sold at Smithfield.

For Middlesex.

	Stone.	
100,000 beast, at 100 stone of 8lb. each, is	10,000,000	} at 4s. is £.3,400,000
700,000 sheep, at 10 stone each - - -	7,000,000	
Lambs 2½, calves 2½, hogs & pigs 2, together	7,000,000	at 5s. is 1,400,000
Poultry, game and fish 5-10ths; dairy 6-10ths	1,100,000	at 6s. is 220,000
Total - - - - -	25,100,000	£.5,020,000

which, divided amongst 648,347 inhabitants, is but little under 39 stone, costing about 8l. each person.

For England and Wales.

	Stone.
One million of bullocks, at 90 stone each, is	90,000,000
Nine millions of sheep, at 9 stone each, is	81,000,000
Lambs 8, calves 8, swine, fish, poultry, game, & dairy, 24; together	40,000,000
Total - - - - -	211,000,000

which,

which, at 4s. a stone (offal included in the price, but not in the weight), amounts to 42,200,000l. sterling per annum; which, being divided among eight millions of inhabitants, is $26\frac{1}{2}$ stone; and being priced in the same manner, amounts to 5l. 5s. 6d. per head, the meat nearly to 4lb. 1oz. per week for each person.

It was given in evidence, on passing the last wool bill, that the clip of England and Wales amounted annually to about 600,000 packs, or 144,000,000 of pounds, which sell at ten-pence per pound, and produce 6,000,000l. sterling.

I take the average yield to be about $3\frac{1}{4}$ lb. of wool from each sheep, therefore dividing 144,000,000 by $3\frac{1}{4}$, gives me 38,400,000 as the stock of sheep; and I apprehend they consist nearly of

14,400,000 breeding ewes, which bring as many lambs. The former are killed off at an average of five years old, or annually	}	2,900,000
24,000,000 other sheep which are killed off at an average of three years, or annually	}	8,000,000
38,400,000		
Total number of sheep killed annually	- -	10,900,000
Lambs slaughtered	- - - - -	2,800,000
Lambs and sheep die carrion (principally from the rot) 1-20th of the two last numbers, or	}	700,000
Yearly increase and decrease	- -	14,400,000

The mutton, taken at nine stone per sheep, gives 98,000,000 stone as the yearly consumption.

The foregoing statement is drawn up from the arguments used on both sides of the two houses of parliament, and the evidence given on passing the last act for regulating the removal of wool.

It implies a greater quantity of mutton annually killed, than is to be met with in any other account, and a greater number of sheep than I think there are in South Britain.

About

About $\frac{1}{4}$ of a sheep per acre, would probably average the cultivated ground. This would amount to $29\frac{1}{4}$ millions, and allowing $2\frac{1}{2}$ millions for the commons, would make 32,000,000 as the number of stock sheep in England and Wales; which yielding $3\frac{1}{4}$ lb. of wool each, would be 120,000,000 lb. or 500,000 packs, at 1s. per lb. is 6,000,000 l. sterling.

In the proportion of 12,000,000 ewes killed in 5 years, or annually	2,400,000
20,000,000 wethers in 3 years, or annually	6,700,000
32,000,000	
Total number of sheep killed annually	9,100,000
Lambs ditto	2,300,000
Lambs and sheep which die carrion	600,000
Yearly increase and decrease	12,000,000

The mutton, taken at nine stone per sheep, gives 81 9-10ths million stone as the yearly consumption.

The medium between the two accounts is 10,000,000 sheep, and 90,000,000 stone weight of mutton.

Estimate of the annual produce of the agricultural capital of England and Wales.

11,200,000 acres of arable land in crop annually, at 5 l. is	£. 56,000,000
44,000 of hop-ground, at 30 l. is	1,320,000
10,000 of nurseries, at from 50 l. to 100 l. say at only 50 l. is	500,000
50,000 of garden-ground cultivated by the spade, from 50 l. to 100 l. say at only 60 l. is	3,000,000
20,000 of unprofitable pleasure-ground which cost a quarter of a million in labour, and return nothing	
21,300,000 of grass land, at 3 l. is	* 63,900,000
7,889,000 of commons	* 1,000,000
40,613,000 - Carry forward	£. 125,720,000

		Millions.
* This part of the account might be varied, by stating the amount of animal food at		42 2-10ths
The wool, at		6
The tallow, skin, bones, &c. at		10
Fed by horses, &c.		6.7
The produce of animals		64 9-10ths
which is the same amount as in the text.—J. M.		

46,613,000 acres.	Brought forward	- - - -	£. 125,720,000
2,000,000	of woods, copses and hedge-rows, at 10s.	- - - -	1,000,000
1,603,000	of ways, water, &c.	- - - -	-
44,116,000	Total annual produce of land	- - - -	£. 126,720,000
2,800,000	of fallow	- - - -	-
46,916,000	total.	- - - -	-

Which costs in labour, artificers and horse-keep - - - 56,720,000

Remains net increase in value on the produce of the land per ann. £. 70,000,000

Of which the landlords take - - - - 42

The state, in taxes and tithes - - - - 13

And the farmers are permitted to share the remaining 15

which is all they receive in return for interest of capital, skill, industry and attention.

If the *manufacturing and commercial* part of Great Britain were to be tried by this rule, namely, of sharing less than one-fourth part of their real gains, as appears to be the case with the *agricultural* branch of the community, they could not exist an hour, under what they would term such severe oppression.

CHAPTER XVIII.

MEANS OF IMPROVEMENT.

THE following summary will, in some measure, shew that more has been done within the bills of mortality, with a view to benefit and improve the inhabitants, than in any other part of the kingdom.

“ There are five hundred and two places of public worship.

“ Four thousand and fifty seminaries for education (including two hundred and thirty-seven parish charity-schools).

“ Eight societies for the express purpose of promoting good morals.

“ Ten societies for promoting the learned, the useful, and the polite arts.

“ One hundred and twenty-two asylums, and almshouses, for the helpless and indigent (including the Philanthropic Society for the reclaiming of criminal children).

“ Thirty hospitals and dispensaries for sick and lame, and for delivering poor pregnant women.

“ Seven hundred and four friendly, or benefit societies, and institutions for charitable and humane purposes.

“ Which several institutions, including the poor's-rate of about 245,000*l.* are supported at the almost incredible sum of 750,000*l.* per annum*.

“ For

* In this, and two or three adjoining counties, public institutions abound; but there is a great want of economy in most of them. They are, for the greater

“ For the administration of justice, there are provided
 “ the following courts, offices, &c.

“ Thirteen supreme courts.

“ Forty-eight subordinate courts (including quarter-
 “ sessions, courts of request, &c.)

“ There are seven thousand and forty lawyers practis-
 “ ing in these several courts.

“ There are fourteen gaols, and five houses of correction.

“ Notwithstanding all these, it is a melancholy truth,
 “ that vice and immorality are daily gaining strength,
 “ and spreading their baneful influence over the inhabi-
 “ tants of this district.

“ *Civil Policy.*—*The recovery of debts stands in the great-
 “ est need of being rendered more easy, speedy and certain;
 “ and of being reduced to the least expence possible. Ac-
 “ cording to the present system, if a debt exceeds forty
 “ shillings, an action may be brought in a superior court,
 “ where, if contested, the expence will, at the lowest
 “ computation, be upwards of fifty pounds, and the
 “ defendant has it in his power so to manage, as to create
 “ an expenditure of several hundred pounds, as well as to
 “ occasion a vast deal of trouble and loss of time to the
 “ plaintiff. So circumstanced, prudent men suffer great
 “ losses by giving up just claims which they may have
 “ on others, and paying likewise false bills charged on
 “ them by designing people, who avail themselves of the
 “ imperfections of the law.*

greater part, converted into expensive jobs, and furnish luxurious support to a few individuals, at the public expence. There is scarcely a treasurer to any public institution for charitable purposes, who shews any disposition to infuse into the administration of its finances, the smallest portion of that economy which he, so properly, exercises in his own private establishment. Even a chaplain to one of them, at this time, costs the subscribers as much as the medium income of a dozen country vicars.—*J. M.*

“ To

“ To convince the reader that this observation is not
 “ hazarded on weak grounds, and that the evil is so great
 “ as to cry aloud for a remedy, it is only necessary to
 “ state, that in this county alone, in the year 1793, the
 “ number of bailable writs and executions for debts from
 “ ten to twenty pounds, were 5719, and the debts sued
 for amounted to 81,791l.

“ It will scarcely be credited, although it is unquestionably true, that the mere costs of these actions,
 “ though made up, and not defended at all, would amount
 “ to 68,728l.; and if contested, the expence would be no
 “ less than 285,950l.

“ Between six and seven thousand persons are arrested
 “ annually in Middlesex, one half of whom are for debts
 “ under twenty pounds. In the kingdom at large, the
 “ number is not less than forty thousand for trifling debts
 “ in the course of a year. The unavoidable expence, in
 “ money, and loss of time, at the lowest computation, is
 “ but little under a million pounds sterling: a most grievous
 “ burden, which, on many occasions, sends both
 “ parties to a gaol, involving the ruin of themselves and
 “ their families.

“ The mind is lost in astonishment at the deficiency
 “ of this important branch of the jurisprudence of the
 “ country.

“ *Humanity, justice, and policy, plead for the amendment
 “ of a system so contrary to reason, and so shocking to hu-
 “ manity*.*”

Most of the means of improving practical agriculture, which occur to me at present, are mentioned in the foregoing parts of this volume. In this place I shall, therefore, only add the following observations.

* For the foregoing account I am indebted to Mr. Colquhoun's admirable *Treatise on Police.*—*J. M.*

In the progress of evaporation, a vast quantity of enriching particles rise, from every putrid substance, into the atmosphere, especially where the *wind* moves with a quick, or uninterrupted current, as it does on downs, hills, and extended plains; from which it carries off more than it deposits; and thus has a tendency to impoverish such places. In situations sheltered by hills, plantations, &c. stagnant air is produced, which deposits more than it takes up—this difference tends towards enriching low land; consequently, if high and numerous hedge-rows, plantations, and lofty trees, were raised in exposed situations, they would interrupt the injurious current, and procure a milder air, which is more friendly to vegetation.

Improvements in *live stock*, in a great measure depend on first improving the produce of the soil. Plenty of tares, turnips, clover, and cole, may be raised on very ordinary land. They will support the best stock, and, provided the soil be sufficiently dry to bear the treading of cattle in every season, even though the land be either *naturally poor*, or exhausted by *bad husbandry*, a succession of these crops being consumed on it, will rapidly advance it into the productive class.

Mr. *Bakewell's* system of improving *cattle*, should be generally adopted; and, by rearing them on such food as may be produced on inclosed arable land, the live stock of the nation would be made to equal the best at this time.

A similar method of annually selecting the most choice *seeds, roots, and fruits*, should become universal; by which means the improvement in the *vegetable*, would keep pace with that in the *animal*, world.

No downs, sheep-walks, or waste land, should be left with any farm, except on the express condition of its being brought into the most perfect cultivation.

No

No tough old sword should be broken up without paring and burning.

A good farmer, of a dry soil, should aim at having tares, turnips, and wheat, every two years.

Every proprietor of a large landed estate should occupy one of his own farms, which, being cultivated on the most improved scientific principles, would teach the neighbouring tenantry the best practice, by the most powerful of all means, *example*.

An act of parliament ought to be passed, to prevent the conversion of timber plants into pollards, and to enforce the cutting down of all the present pollards. This might be so managed as to convert two millions of acres of hedge-rows into nurseries for growing timber trees. It would also be the means of adding very much to the profit of the land-owner; of increasing the beauty of the country; and of providing the most ample support for our shipping.—(*Vide pages 277, 278*).

Improvements should, generally, be made by the tenants, in consideration of long leases. This would secure the rent to the landlord, with other advantages.—(*Vide pages 283, 284, and 285*).

Any contrivance by which the land could be preserved from deterioration, would be a valuable acquisition both to the landlord and the public. Perhaps an act of parliament should be passed for this purpose, requiring, that on the expiration of every lease, a valuation should be made of the waste committed on the soil, hedges, ditches, and drains, as well as on the buildings; and the amount of such valuation to be paid by the *outgoing* tenant, to the *incoming* one.—(*Vide pages 53, 54, 82, and 83*).

Woods and plantations might be made to contribute to the beauty of the country, to an equable climate, and to the wealth of the nation, by being raised only among
rocks,

rocks, and on such hills, mountains, and other situations, as are unfit for the production of more valuable crops.

The wastes, which, in their present state, serve only as a resort for robbers, as the seat of agues in man, and of rottenness in sheep, and to keep up a worthless breed of cattle, might be advanced, by cultivation, so as to rank with the best land in the kingdom.

Canals being introduced in so general a way as to leave few places more than five, or seven miles distant from one; and the *roads* being kept so clean and hard as to be almost free from every obstruction, would be very important advantages to farmers.

An increasing population (as the greater number of mouths to be supplied will create ready markets) must be friendly to agriculturē. Cities, therefore, being the graves of mankind, reduce this demand much below what it would be, if the inhabitants were more equally distributed over the more healthy parts of the kingdom.

Peace, as it usually gives much greater energy to the industry of the inhabitants, is the principal cause of increasing wealth among the middle, and more numerous classes of society, and, consequently, induces a greater consumption of animal food; which will, as certainly, require a larger extent of cultivated ground*. It is self-evident, that, as the wealth of the country increases, the demands on the soil must increase in somewhat of the same proportion; and these demands cannot much longer be satisfied, without inclosing and cultivating the waste land †.

* "In times of peace, the busy hand of labour plies the plough, the shuttle, the hammer and the spade. The reward is plenty, rapid improvement in the arts, and increasing population."—*W. P.*

† Every acre will support its man well, so long as he continues to live on *vegetable food*; but only let him change his diet to one meal per day of *animal food*, and he will require the produce of four acres.—*J. M.*

To finish the account, *commerce* would be much benefited, and the wealth of the nation augmented, by carrying the surplus products of the soil to the markets of other nations.

On the whole, the improvements here enumerated, if properly carried into effect, would *double* the annual amount of the *agricultural* capital of the country; and, although they are too considerable in number, as well as in magnitude, to be very speedily accomplished, yet they are certainly attainable; and if the gentlemen who compose the Board of Agriculture, should only be the means of putting them in the way ultimately to arrive at perfection, they will deserve the grateful thanks of every Briton.

That the endeavours of the Board will, in the end, be crowned with success, it would be unreasonable to doubt, since we know that the growth of both clover and turnips was at first reluctantly adopted by farmers; and *tares* are still only grown in patches, as clover and turnips formerly were. There is little doubt, however, but that *they* will soon attain the pre-eminence they deserve.

I shall conclude with advising to make experiments on a small scale at first; as, if they were always so made, till they flashed conviction on the sceptic, the discredit sometimes arising from great miscarriages, would be entirely done away.

CONCLUSION.

IN the preceding work I have endeavoured, so far as my information and ability enabled me, to give a faithful picture of the present practice of the county of Middlesex, in regard to agriculture; together with such observations and remarks thereon, as occurred to me at the time of writing them; in doing which, and in recommending any new system, either from my own experience, or the practice of other counties, I have acted from the full conviction of the utility of such measures, and the certainty of their proving highly beneficial to the nation at large.

In the discussion of such subjects as may be deemed not immediately relating to agriculture, though in some measure connected therewith, I have endeavoured to confine my remarks to those particulars only that appeared to me most deserving the attention and concern of the landed interest in general.

I have also, with a degree of earnestness proportioned to the magnitude of the subject, endeavoured to point out some of the most material obstacles to the improvement of agriculture, and thrown out a few hints, for the consideration of more able men, towards removing those obstacles. These, I hope, will be received with candour, and with that attention which the interest and importance of the subject itself is more entitled to claim, than the manner in which it has been discussed by me.

I have now only to return my most grateful acknowledgments to every gentleman who has kindly come forward, and given me such assistance as lay in his power. To many of them, I am under very great obligations.

JOHN MIDDLETON.

A P P E N D I X.

NO. I.

ACCOUNT OF IMPLEMENTS OF HUSBANDRY.
BY THE REVEREND JAMES COOKE, OF RED-
LION-SQUARE, LONDON.

“ I N my several excursions some years past, for the purpose of introducing the drill system, which is now sufficiently understood by practical farmers to ensure its success, I found in this island about twenty ploughs of different constructions. It occurred to me they could not all be equally right, or that, if one out of the twenty was right, the remaining nineteen must be wrong. Thereupon, the true principle of the *common plough* became an object of investigation, in which I was for some time misled, by endeavouring to class it, as others had done before me, with the mechanical power called *the wedge*. I was not long in discovering my error, and that it was not *the wedge*, but the mechanical power called *the inclined plane*, that constituted the true principle of the common plough.

“ From the imperfections which I observed in the work of common ploughs, some furrows being set too much on the edge, others laid quite flat (both extremes equally wrong) I concluded that their medium could not

be far from being right; I therefore fixed on the angle of five and forty degrees for the form of the fore and hind parts of the plough, with a mould-board uniformly twisted, as best adapted for taking up, or raising the furrow with the greatest ease, and delivering it with the greatest regularity. On this principle I had a plough constructed; which, on trial, answered the intended purpose and my expectations.

“ Being satisfied with the principles of this plough, and that the exact form might be preserved, I had it cast in iron, with the land and furrow sides growing together, which renders it not only strong and durable, but unalterable by workmen. It is made without wheels; but I prefer wheels, two before and one behind, a deal of friction being thereby obviated, and consequently less draught required.

“ The strongest proof of accuracy in the construction of any plough, consists in every part of the mould-board bearing an equal resistance to the approaching furrow, which is ascertained by every part of the mould-board receiving an equal polish from the friction of the furrow.

“ Admitting this plough to be mechanically true, which I trust I am able to demonstrate, and that it performs its work better, and requires less draught than any other plough I have hitherto met with, my hopes of living to see it in general use are, nevertheless, not very sanguine, owing to the attachment of ploughmen in general to the ploughs of their respective counties, and the true principle of ploughs not being sufficiently understood by their employers. I shall, nevertheless, persevere in the use and introduction of this plough, believing it to be the best, until I can find a better.

“ *The cultivator*” may be considered as an appendage to the drill, being applied to the drill axis when at work.

It

It is particularly useful in making clean fallows of all descriptions at half the expence of ploughing, &c. It consists of a diagonal beam, with from three to seven shares of different sizes, for various uses, applied to two handles, by which it is guided laterally, and may also be forced into the ground to any given depth at pleasure. It is used as a substitute for ploughing and harrowing, by tearing or lacerating the soil internally, without tearing a furrow. The narrow shares or scarifiers, are, in some cases, used for obtaining a tilth in light soils without ploughing at all, and the broad shears for cutting up a fleece of weeds, and afterwards leaving them to perish on the surface of the land.

“ In strong compact soils, if land is ploughed once before winter, or early in the spring, the remainder of the business, in making a clean fallow, may be performed without repeated ploughings, better than with them, and at half the expence. By the action of *the plough* some weeds are turned down and buried, others are transplanted: by the action of *the cultivator*, they are all brought up to the surface, and left there exposed. I cannot here sufficiently describe the utility of this implement, particularly in obtaining an expeditious tilth for barley and oats after turnips, without ploughing.

“ In preparing land for barley, &c. after turnips, I cannot consider the plough and harrow of any other use but to obtain a proper tilth, or pulverization of the soil, all which may be obtained by a proper and seasonable use of *the cultivator*, in half the time, and at half the expence, with the richest and clearest portion of the soil left on the surface for the reception of the seed; instead, as in the first instance, of its being turned down by the plough, out of the reach of the fibres of plants, and a raw or less fertile soil brought up for the reception of the seed.

"I never see common harrows at work, but I am presented with ideas of awkwardness, respecting the process and danger both to men and horses; both which are obviated in my practice, by applying a proper harrow to the under side of the coulter beam of the drill. The harrow, in that case, supplies the place of the coulters, and may be lifted up at pleasure to discharge the accumulated weeds, or forced down, so as to overcome the resistance of complete soils: and by being lifted up at the ends of lands, it clears off the ground; and all danger, while the horses are turning round, is thereby done away."

"The practice here recommended so strongly by Mr. Cooke, is adopted in this county by Mr. Ruberry, of Sutton-court farm, Chiswick; by Mr. Winter of Acton; and Mr. Thorn of Ealing. The first of these gentlemen has experienced great advantages from it, and is sanguine in his expectation, that, if pursued with spirit, it will prove highly beneficial to the arable culture of the lands throughout the kingdom."—(*Foot's Survey.*)

NO. II.

ON THRASHING MACHINES. BY MR. M'DOUGAL.

PRICES of thrashing with the flail, hand-mill, and horse-mill.

With the flail.

Prices according to the wages of the country, from 4d. to 6d. per bushel.

Two

	per bushel.		per quarter.	
	s.	d.	s.	d.
Two men thrash 1 quarter per day, } where the wages are 1s. 6d. each, } at 2s. each	0	4½	3	0
	0	6	4	0

By the hand-mill.

	s.	d.		
Two men, at 1s. 6d. each, is	3	0	}	0 2½
Two boys, at 9d. each, is	1	6		
	4	6		
				1 9½

They thrash 20 bushels in ten hours.

By the horse-mill.

From a survey of East Lothian mill, which cost 80l. and is worked with four horses. It thrashes 30 quarters in 10 hours.

The expence is stated at - - 0 1½ 1 2 besides building the horse-shed, and requiring a much larger barn to hold the machine. The hand-mill requires no additional building, and the expence of it is less.

Eight farmers were present at an experiment made by the hand-mill machine. It thrashed two bushels per hour; and they all agreed, that there would be at least one bushel gained in sixteen, by the machine thrashing so much cleaner.

Mr. M'Dougal, the maker of the hand-machine, has invented a new method of applying a lever to increase the velocity of a circular motion, by which a man is enabled to thrash 20 bushels of wheat in 10 hours, at an expence not exceeding 2½d. per bushel, or 1s. 8d. per quarter. And this method of applying a lever may also be made use of

of to other machines; as hand-mills, cranes, pumps, &c. so as to be performed by a man. These machines are easily conveyed from one place to another in a cart. And, where greater quantities of grain are required to be thrashed than one or two men can perform, the machine may be made to be wrought with one horse; at a small additional expence. Each method may be made use of, as will best suit the farmer's conveniency.

NO. III.

ON THE CULTIVATION OF WASTE LANDS:
BY T. S. D. BUCKNALL, ESQ. IN A LETTER
TO THE AUTHOR.

SIR,

IN your favour of the 19th August, you desired me to assist in giving some information towards drawing up the improved Report respecting the agriculture of Middlesex. I send a few hints, extracted from a paper I had the honour of delivering to the Board of Agriculture in October 1794; where I entered pretty fully on the subject of inclosures; something on manures; and a comparative view of the agriculture of Kent—some of which I here send. How far they may now improve your work, I cannot say. If you should think the whole, or any part, will enforce such a habit as to improve the culture of the country, you will be so good as to introduce it by way of letter in the Appendix. But the value of my thoughts must depend upon how far they may correspond with what you have written; therefore dispose of my
paper

paper as you think best. They apply very properly to Middlesex, that being the centre of general communication.

Inclosures.—It cannot be doubted, but the greater part of the waste lands in South Britain produce but little to the individuals: that in the grand object of a public revenue to the state, they are totally useless; and the community at large are greatly injured from such extensive tracts of valuable land being kept out of cultivation. But as there was a general inclosure bill introduced last year, I shall not now enter further on that subject, than wishing a conciliatory plan may be introduced, where the grand outlines of the lord of the manor, the church, the landowners, and the substantial farmers surrounding the different wastes, should find their interests guarded, and their profits increased. Another consideration should be, to place the inferior orders of mankind—the cottager*, and industrious poor—in such a situation, with regard to the inclosures, that they should certainly have some share secured to them, and be treated with a gentle hand. Keep all in temper—Let no rights be now disputed; for, to speak the truth, the wastes, and all appertaining to them, are really and properly the fee of the lord, subject to the rights of usage, indulgence, or neglect; out of which, by the power of antiquity, sacred and substantial claims have gained a possession both in and over the soil. Remember, I am speaking to conciliation—for happy it would be, if the whole body of the people could strongly feel the sensations of accord; and I am certain the little the rich would give up to indulge the poor, would be substantially made up to them by avoiding expences in opposition.

* The cottager has a share, but is generally dissatisfied.

The great argument maintained against inclosures, is the commonage for cattle ; but little experience must convince, that animals born and continued on extensive commons, where they are kept for nine months out of twelve, in a state of starvation, can produce no benefit to the kingdom at large, and very little profit to their owners. Whereas, were those extensive tracts brought under due cultivation, the whole people would be greatly benefited. Surely it must be deemed a real misfortune, that in a popular and wealthy country like Britain, there should have been a chance of distress for want of bread-corn ; and yet the evil became too pressing. Though now relieved, it has been done at an immense expence by importation, which must have drained the country of much money, and is every shilling lost to the industrious part of the community. Every country, if possible, should be capable of producing its own substantial food, and a little to spare, which is the most effectual way of keeping bread nearly upon an average ; for any great variation always creates distress and much dissatisfaction. Neither can proper bargains be made, when so extensive an article as wheat can be raised fifty per cent. in a few months ; and this is a very substantial argument for bringing more land into cultivation. Let no one be afraid of too many people, or too much employment, for they constantly and invariably are the mutual support of each other.

I have long thought, where there are large tracts of land to be inclosed, it is a mistake to throw it all under the plough ; for were a part planted with such trees and under-wood as might suit with the soil and situation, the wood arising therefrom would apply to such useful purposes as to become a blessing to the surrounding country ; and, upon the planted parts of the land, the expence of levelling might be saved, besides the pleasing reflection of shewing

to

to the world the effects of an intelligent mind, capable of catching the local circumstances, and turning each spot to the best advantage. These effects are fully exemplified in the better part of the agriculture of Kent, where most of the unpromising bits of land are appropriated to wood, or some useful purpose.

There is a further advantage in planting, which is the raising judicious shelter to keep off the cold winds in the spring, and which I have before recommended under the head of planting orchards, where shelter appears to be absolutely necessary, and will become universal. Shelter is also of service for cattle through the winter, for by their being kept warm, they can subsist upon less food. The advantages arising from shelter and wood are innumerable: I say *wood*, in opposition to *woods*, for extensive woods neither improve the air or fertility of a country, and should be avoided. What I mean by wood, are slips, or belts and pieces, running triangular, or any form, as may best suit the land: also brows of high hills and deep valleys, or where a range of green would give a picturesque appearance to the country. Remember Prior's farm house—

“ In summer shady, and in winter warm.”

Why do people complain of the dreariness of riding over extensive commons?—Because there is no shelter!

A person undertaking a large inclosure, is performing a public spirited act, and should meet with all indulgence; for let him perform his business with the greatest caution, or take what steps he may, it is impossible for him to benefit himself and family, without at the same time producing much good to the community; and a moment's reflection must convince, that it is the public who ultimately enjoy the blessings of plenty, long before the proprietor can have a shilling return of his expences, without
allowing

allowing any compensation for the fatigue and disappointment naturally attendant upon all extensive undertakings.

I do not attempt marking the due proportions which are properly left to the commissioners, but must again enforce some slight indulgence to be granted to the body of the people from all extensive inclosures, which would remove the dislike, and prevent them from joining in a clamour. In most inclosures, a gentleman no sooner hints at taking in an extensive tract of land, than he is held up as an object of public dislike, by some popular misrepresentation of a few artful persons, who, thinking it may suit their private interest to obstruct the measure, easily contrive to play upon the minds of the ignorant and unguarded; and these last descriptions of persons finding they have nothing to gain by the inclosure, readily join in the general cry against the measure. It is far more easy to prevent a clamour than to stop it when once it is raised. Those who are acquainted with the business of inclosure, must know that there are more than four-fifths of the inhabitants in most neighbourhoods, who are generally left out of the bill for want of property, and therefore cannot possibly claim any part thereof. This description of persons, whom I call the great body of the people of the country, should be addressed in the most friendly manner—be requested to keep quiet, and follow their usual employments: it ought to be suggested to them, that there is an intention to do something for them; and that their convenience shall be attended to, if they did not, by improper zeal, frustrate the undertaking.

I say, a gentleman no sooner makes a proposal, than he is, by artful clamour, held up to his neighbours in public detestation, and all his intended measures are endeavoured to be counteracted. If he perseveres so far as to bring the matter before parliament, there he is almost certain
of

of having every clause in his bill opposed; and if he means to succeed, it is at an immense expence, and compelled to fight it through inch by inch; and very likely, towards the end of the session, from some unforeseen or capricious circumstance, the bill is at last reluctantly given up. For these reasons, a gentleman of the least sensibility would rather suffer his residence to continue surrounded by marshes and bogs, than take the lead in what may be deemed an obnoxious measure, knowing the difficulties he must encounter when he gives himself any concern for the improvement of his own estate, though his neighbours, and the country at large, are so much benefited by the measure. Whereas, were the great body of the people attended to, these things could not happen; for the people have too much good sense to join in opposition against themselves. Therefore let me hope there may be a part vested in each parish, and held as a sacred deposit, to produce premiums and bounties to be distributed among the industrious poor; and, if possible, every labouring inhabitant having a house and family, should be indulged with a little garden, and a lot in some convenient part assigned for producing fire-wood for the cottager, and this description of persons. Only to attempt these good acts, would be more than sufficient to secure their interest and regard, which interest should invariably be attended to, for out of the industrious poor spring the foundation of the wealth of the country. It is not material to the state who occupies the land—whether it is held in large or small lots, provided it is productive; and I am persuaded such a mutual confidence might be established, as to produce comfort to the individuals, and benefit to society. I am here speaking of inclosures on a large scale, not the small common.

Whether

Whether the business is brought about by a general, or separate inclosure bills, is nothing to the purpose; the material object, is to avoid *litigation, expence, ill-will, and loss of time*, and that the subject should be clearly and practically understood; and for that purpose, I recommend a power to be lodged in the Board of Agriculture, for them to have an established surveyor, whom they should send to any extensive tract of wastes, whenever two-thirds of the proprietors, publicly met, should desire it; which surveyor should be directed to take the first outline, understand the levels, see where the drains and roads ought to run, and plan the turning the waters into their proper channels, that it may afterwards lead to useful purposes. All this should be fully understood, before it can be known what particular lot of land will fall to any man's share, for the misfortune is, people get into *wrangles and mistakes* before they come to the real business. This surveyor should be a man of experience, who has been practically brought up to draining, planting, and the several branches of rural economy, and who, when he goes to meet the proprietor, will be able to point out, that upon such and such levels he would recommend so and so—it was done at such a place, and answered particularly well—on that side such a mode would be better. This surveyor, by experience, and seizing local circumstances, should be able to convince the proprietors, that his mind is capable of doing them essential service, and then they will attend to him. Observe, we are not come to inclosing yet, for after all this, the view which he has been able to collect, with the concurrence of the persons present, should be carried to the Board; there examined by a clerk, who should keep a register of former transactions of the same sort—whether it be uplands, moors, heaths,

heaths, &c. &c. Then the report should go to a committee, where the members, being gentlemen of the first experience in their respective counties, the plan may receive such hints and touches as will bring it near perfection, before hardly any expence is commenced. Whereas in this part, the time and expence of going through the committee of the House of Commons, before it can be called a bill, often comes to more money than the inclosure can be worth to the individuals then concerned in it, consequently they are indifferent about the event. But from this failure the kingdom sustains a most material injury.

There will be this further advantage in applying to the Board—there can be no extensive property come under the contemplation of inclosure, but some of the members must be interested in it; and from their attention and knowledge of the country, much valuable information may be collected without expence. And if we could insensibly instill into the minds of men, a habit to unite for producing improvements in their respective neighbourhoods, and that disposition could become general, it would be as powerful as the *influence of the sun*—warm and enliven the whole island. The Prince certainly has made most laudable exertions for the improvement of agriculture—he has raised it from an art to become a science; and the exertions of the honourable President have happily seconded his gracious intentions.

From the report of the committee on the waste lands, it appears that in South Britain there are 7,888,977 acres, which number is so vast, that the human mind, without some assistance, shrinks under the idea of many millions; therefore take it in this light—suppose it possible to collect all the wastes of South Britain into one continued spot, and form a square, it would be found to amount to more than 108,

which being taken as the 108) and applied in miles, to a right line, will extend from Bristol to London, on which ideal line erect a square, and placing it on the map, will cover all the countries contained in right lines from London to Lincoln; from thence to Chester; then to Bristol, and east to London—Lay the paper upon the map, and there is a convincing argument of what proportion the wastes bear to the cultivated country. In laying down the square, I chose capital cities, to bring the subject more within the powers of the human understanding. But my ideal square is not 108 miles.

Whoever will take the trouble to extract the root of 7,888,977, will find the square amounts to more than 108 square miles, in which might fall, the parts of the following countries, provided the angles of the square were bounded by the four great cities of London, Lincoln, Chester, and Bristol; that is, such a square of 108 miles would cover, viz.

About two-thirds of Cheshire.

One-half of Derbyshire.

Part of Lincolnshire.

Four-fifths of Shropshire.

All Staffordshire.

Leicestershire.

Rutlandshire.

A small bit of Huntingdon and Cambridgeshire.

Three-fourths of Herefordshire.

All Worcestershire.

Warwickshire.

Northamptonshire.

Gloucestershire.

Oxfordshire.

Buckinghamshire.

Bedfordshire.

One-

One-third of Hertfordshire, with a slip of Wiltshire ; most of Berkshire, and the greater part of the county of Middlesex.

It must be held as a matter of surprize, that lands equal in extent to these tracts, should have been suffered to continue in commonality, by an intelligent and wealthy people, to this day ; which must shew great inattention to the interest of the state, and individuals ; or a very strong attachment to old customs—it might be deemed improper in me to say *prejudices*.

Had I the powers of language to convince the world, that, viewing the state of the continent, *now* is the *time* firmly to unite in each neighbourhood, with a hearty desire of turning every foot of land in Great-Britain to some useful and productive purpose ; to draw health, wealth, and happiness from honest labour and industry ; I should think I had lived to very good purpose. Many years of my life have been dedicated to prove myself an unwearied friend to agricultural pursuits, and consequently beneficial to mankind.

These wastes, it could easily be proved, are capable of employing, in inclosure, planting, building and cultivation, a capital far exceeding *twenty millions sterling*, which would ultimately turn to very great account ; and when brought into proper arrangements, no one can foresee what an increase of revenue, population, labour and provisions such an expenditure must produce.

These thoughts are well worthy the patronage of parliament ; and there I leave them.

NO. III*.

EXTRACT OF A LETTER FROM THE RIGHT
HONOURABLE THE EARL OF BERKELEY TO
THE AUTHOR.

THE improvement of wastes, and the further encouragement to agriculture, is very simple, and requires only two things to be done, and there will be no occasion for any enforcing clauses in the act of parliament. It is this—find the means of *preventing* the excessive expences of office from the lords, commons, and agents; and every yard of waste and common field will be inclosed and cultivated to its utmost the moment that secret is found out.

The rights of every person concerned in an inclosure, is *now* perfectly understood; and when an inclosure bill has passed, every lord of a manor, clergyman, freeholder, and cottage waster, are perfectly satisfied with their divisions—the rights of each are very well understood, and want no further restriction or enlargement; in doing of which Sir John Sinclair lost his bill, and will always lose it, if he makes a fresh distribution of their rights—let him lessen the expence of passing inclosure bills, and every thing is done. I had made remarks on the wastes in Middlesex, living in the middle of one (Hounslow-heath), the finest wheat land in England uncultivated, as I can prove by the small pieces that have fallen to my lot as lord of a manor.

NO. IV.

HOUNSLOW-HEATH.

Copy of an ancient ordinance, kindly furnished by Sir William Gibbons, Bart. of Stanwell-place, which shews the original rights claimed by different parishes on Hounslow-heath.

The Bill of Hounslow-Heath 37 Henry VIII.

WHERE the King's Majestie ys at this present seased of one estate of inherytance of the waste grounde and soyle comonlye called Hounsloo-heath, conteyning in ytsel ffower thousand twooo hundryth ffower score thyr-tene acres and one roode, lying and extending into the fields, parishes, and hamlets, Istelworth, Braynford, and Twykenham, Heston, Feltham', Harlington, Craynfeld, Harmondsworth, Stanwell, Hanworthe, Bedfounte, Hampton, Hounsloo, and Tedington, in his Grace's countie of Middlesex; his Highnes most prudentlie considering, that as the barrenness and infertylitie thereof, by waunte of dyligence and industrye of men, necessarylye requyred for the amendment or mayntenance of any grounde that shall bryng forthe his frute, breadythe as well scarsytie and lacke of all manner of grayne, graffe, woode, and other necessary thynges, amongs his Grace's subjects thy inhabitance of the said parishes, as also is the veraie oryginall mother and contynual nurs 'of derth of thyngs amongs his people dwelling in the confynes of the

same, even so the conversyon therof into tyllage and sev'al pasture by menys labor and paynes, besides that yt shall be an exile of idlenes in those parties, must of necessity cause and bring furthe to all his said subjects plantie and habundance of all thyngs above remembred; and albeyt his Highnes myght justelie, by the auneynt lawes of this his realme, approve to his owne peculyar proffyt and advantage a greate parte of the same waste and heath; nevertheless, his Majestye most graciouslye tendering more the common wele of his subjects there than the advauncement of his owne comoditie, hath not alonlie already, to his great costs and charges, caused dyverse of his counsell, and others of his officers and mynysters, by vertue of his Grace's commysion in that behalf to them dyrected, to repayre thither, to vewe, survey, and consider, the said wast and heth, and thereupon to assygn out, by mete and bounds, to every of the said parishes, a convenient parte and porc'on of the same, and owt of those parts and porc'ons, by lot, to apoynte in severaltie to everye inhabitant within the said paryshes and hameletts suche quantite of the said heathe, as by the dyscrecyon of the said commysioners was thought mete and convenient, having a specyall regard to the nombre of the inhabitants in every parishe, and to the nombre of acres of heth lymyted to everye of the said hameletts and parishes; but also is contented and pleased, at the humble petycion and sute of his said subjects, to whom and thair posteritye the comoditie hereof shall specially redounde, that yt be enacted by his Highnes, as hereafter ensythe: Wherefore be yt ordayned, enacted, and established, by the King, with thassent of the Lordes Spiritual and Temporall, and of the Comons in this present P'liament assembled, and by the authoritye of the same, that suche parte and so muche of the said waste and heth whereof his Grace is

now

now seased, or at any time hereafter shall be seased of one estate of inherytance, as shall be at any time hereafter by his Grace's comyssoners, or fflower of them, heretofore named, or hereafter to be named, certyfyed under their hands and seals, into his Highnes Court of the Augmentac'ons of the revenues of his Grace's crowne, to be mete and convenyent to be converted, used, or occupied, into tyllage, pasture, meadow, or other severall grounds, shall from hensforth immediarly be and remayn perpetually copyhold lands, and shall be deamed and adjudged of the nature, qualetye, and condicon of copyhold lande, to all intents, construcc'ons, and purposes. And that every tenente, inhabytant, resyante, and others, their heires, successors, and assignes, and the heirs, successors, and assignes, of every of them, shall have and enjoye suche ryght, tytle, interest, possession, remaynder, and reversion, of and in the porc'on and parte of the said wast and hethe, to them or any them by the said commyssyoners assygned, or to be assigned, as shall be by the said commyssyoners, or fower of them at the lest, by copy to them or any of them to be hade and made, declared, or expressed, and the same shall be certyfyed in to the said court of Augmentacions under there hands and scales. And be yt further enacted, by the authoritye aforesaid, that all and every tenate, inhabytant, and resyant, and other above remembered, shall immediatlie after cetirficat, made as ys aforesaid, be deamed, adjudged, and taken to be tenate, by copy of court rolle, of the part and porc'ion to them, or any of them, as ys aforesaid allotted and granted by copy of court rolle to such manor or lordship being within the said parishes and hamletts, or any of them as the said comossoners, or fower of them at lest, uppon the said certyfycat, shall, under thair handes and scales, assigne and appoynte them or any of them unto,

and according to the tenor of the copy of courte rolle to hym or them made of the same ; and that after assignment and certyficat made as ys aforesaid, the same parts and porc'ons shall be taken, had, and reputed, to all intents perpetuallie, as only members and parcells of the mannor or lordship whereunto they ar so appointed and assigned ; and that the stewarde for the tyme being of any such manors or lordshipps, whereunto any part or porc'on of the said hethe or waste, shall be by the said comysyoners, or fflower of them assigned unto, shall, after certyfycat thereof as ys aforesaid, have full power and authoritye from tyme to tyme, as the case shall justlye requyre, to lett and grant the same, by copy of courte rolle, to any person or persones, to hold the same parts and porc'ons, accordyng to the estate and interests prescribed in thair copees, at the wyll of the lord, accordyng to the custome of the manor or lordshippe whereunto the said party and porcons are as ys abovesaid assigned or appointed to apperteyn ; and also, that all customes, usages, condycons, and ordynances, which the said comysyoners or fower of them at the lest, shall at any tyme hereafter prescrybe, rendre, decree, or make, concerning any parte or parcell of the said wast or hethe, shall be as good, fyrme, and stable in the lawe, beyngg certyfied under the handes and seales of the said comysyoners, or fower of them at the lest, into the said court as ys aforesaid, to all purposes and effects, as yff thaie and every of them were particularly recyted and enacted by authoritye of this Parlyament. Provyded allwayes, that yf any suche persone or persones, to whom any parte of the sayd waste and hethe shall be allotted, do ether refuse to take by copy of court rolle the parte and porc'on to him allotted, assigned, or letten, or to be allotted, assigned or letten, as ys aforesaid, or ells refuse to convert his sayd part or porc'on into tyl-
lage

lage or pasture, and in suche sorte to improve the same, within such tyme as to hym or them shall be prescrybed or assigned by the said comyssyoners, or fower of them at the lest, that then suche persone and persones as be or shall be tennte for terme of lyf, for terme of yeres, or at wyll, of such messe, cotage, or lande, in respect wherof the said parte and porcon is or shall be alloted or assigned, shall and maye take, have, and receyve of the sayd stewards, the said part and porcon of the said wast, to hold at the will of the lorde, after the custome of the said mannor or lordshippe, for terme of twenty-one yeres; the remainder thereof after the end and determination of the said lease of xxi yeres, to the owner of the said messe, cotage, or lond, to hold to him, his heires, and assignes, at the will of the lorde, after the custome of the said mannor. And be yt further enacted, by the saide authoritye, that yf the said lessee refuse that to take as ys abovesaid, that then any other the King's subjects, borne under his Grace's obedience, shall and may take, have, and receyve, the same parte and porcon of the said waste, as ys abovesaid, for term of xxi yeres, with remaynder to the said owner, as ys abovesaid. Provided also, that all and everye suche lessee for terme of xxi yeres, as ys abovesaid, shall and maye improve the said part and porcon of the said waste and hethe to hym letten, by cople of court rolle, during the said xxi yeres, without any interrupcion of any owner of any such messe, cotage, or londs, any surrendre, discharge, determinacon, or forfayture, of his or thair interest, estats, or terms, of and in any suche messe, cotage, or londs, notwithstanding.

Signed, GEORGE ROSE,
Cler. Parliament.

NO. V.

LETTER FROM ANDREW REID, ESQ. TO THE
AUTHOR,

RELATIVE TO ENFIELD-CHASE, AND THE INCLOSURE OF THE COMMONS NEAR LONDON, URGING THE NECESSITY OF MAKING THEM FREEHOLD, AND TITHE-FREE.

SIR,

I AM sorry it is not in my power to answer your queries respecting Enfield-chase, with any degree of accuracy. Not having any interest in it, and my time being very much taken up in my business, I have not attended to the cultivation of each separate allotment; but from riding over it frequently, I am enabled to state in general terms, that the King's allotment, for the number of acres it contains, is in the worst state of cultivation of any land on the chase. A considerable portion of it, I believe from one thousand to twelve hundred acres, fell into the hands of a Mr. Kays, the greatest part of which either lies in its original state, or is in as bad a state of cultivation as it can possibly be; in some instances, hardly growing the seed sown upon it. The South Mims allotment has, in general, been brought into the highest state of culture, and this year bears as fine crops as I ever beheld. Mr. Byng, in particular, has a farm of chase land, his proportion of Mims allotment, which may challenge some of the best land in the kingdom for the burthen it produces, and for the peculiar good husbandry which is bestowed on it. The allotment set apart for the
parishes

parishes of Enfield and Edmonton, remain in a state of commonage to these parishes. I cannot say the number of acres it contains, but it must be considerable, and produces but a very scanty herbage for the maintenance of the stock turned out upon it, particularly that part of it which is attached to Edmonton, where all the timber and underwood has been cut down, and the cattle deprived of that shade so necessary for them in summer.

It is highly to be lamented, that the valuable commons of England should remain so long uncultivated; but particularly so, that Finchley-common, Hounslow, Epping-forest, and other tracts of very valuable wastes within twelve miles of London, should not be inclosed even by a compulsory act of parliament, if it be found impossible to accommodate all the jarring interests that impede this great improvement in any other way. Finchley-common, with which I am best acquainted, I suppose contains from seven to eight hundred acres, and the greater part of it of an excellent quality. On an average, I presume it would lett at thirty shillings per acre, the tenant being at the expence of inclosing it. At present, it starves a few miserable ponies, and a much larger stock of sheep than it can carry; and in wet summers, many of the sheep die of the rot. The increasing size of the metropolis demands that every acre near it should be brought into a state of active cultivation; and if the clergy, lay impro-priators and others, are blind enough to the great interest of the community, and to their own in particular, as to throw obstacles in the way of a general inclosure bill, on the only sound principle on which such a bill can be beneficial, I mean making the new inclosed land tythe-free and freehold, a law should pass without loss of time, to compel them. Sir John Sinclair's bill I have thought extremely deficient, inasmuch as it leaves the clergy the option

option of taking such a proportion of the commons as can be agreed upon, or of taking their tithes in kind after the improvement takes place. It also gives a negative to the majority in numbers; and as all the commons round London are depastured by the cattle of the small freeholders and copyholders, whose proportion of the common, when inclosed, would not be an object to them, it is reasonable to suppose that they would object to an inclosure. Finchley-common in particular, is without stint, and people living in other parishes, taking a field in Finchley, and erecting a hut in that field, where they make a smoke, turn as many sheep on the common as they please; it therefore in such a dry summer as this, becomes of little or no value to any one.

I have said thus much on the subject of the wastes, in hopes that those in the county of Middlesex may form a very striking feature in your improved Report. I most anxiously wish to see them all inclosed, and shall be happy to see you take up the subject in a manner that must convince every man that these commons in particular should be immediately inclosed, free from the trammels which the clergy would impose on their improvement; and, if possible, free from any claims from the lords of manors, to whom an equivalent might be given in land, or in money.

I have the honour to be, Sir,

Your most obedient humble servant,

ANDREW REID.

Greenhill Grove, near Barnet, Herts,

August 16th, 1796.

NO. VI.

LETTER FROM DR. WILKINSON, TO THE
AUTHOR,
RELATIVE TO THE CULTIVATION OF ENFIELD-
CHASE, AND THE SUPERIORITY OF PARING AND
BURNING TO EVERY OTHER METHOD OF TIL-
LING THIS SOIL, &c. &c.

SIR,

IN answer to your last favour, permit me to assure you of my readiness to assist in completing the Agricultural Survey of Middlesex by any information which it may be in my power to communicate. I am in possession of a map of the several allotments which, at the time of the general inclosure of the chase, were given to the crown and to the adjoining parishes. As this map is now become scarce, it is of consequence to preserve it in some public record. If you think it worth inserting in your survey, I will send it to you, fully depending on its being safely returned.

IN answer to your query respecting the chase, the whole of the inclosed land is now in cultivation, except about 1,200 acres belonging to the tenants of the crown.

I have found the fertility of the chase land much increased by the application of chalk and lime. The strong wet loams of this district are rendered dryer and more mellow by the calcarious earth. I have laid on twelve loads of chalk and 160 bushels of lime per acre. They are brought from Cheshunt-common, distant about three miles.

miles. In a wet winter, the extent of the lime and chalk might have been easily traced, by the superior vigour and more florid appearance of the wheat. I have likewise found, which is worth remarking, that the harvest was forwardest on the lands which had been chalked and limed. Where I adopted this practice, the crops have been uniformly good in the following succession: fallow, wheat, beans, wheat. My experience carries me no farther, as it is only three years since I began the use of lime.

Should a general inclosure of the waste lands take place, there is no question of more importance than the expediency of breaking up the turf by *paring and burning*. My own experience suggests the following arguments in favour of this practice.

That it saves a very heavy expence in the first breaking up of land, when a guinea per acre will not cover the charges of ploughing.

That the burnt clay, acting as a mechanical manure, breaks the stiffness and adhesion of the soil.

That the ashes are found to possess the most fertilizing qualities as a manure; and by this operation are laid on the premises at a small expence.

That by destroying the natural coarse grass which grows up among the corn (unless the turf has been previously burnt), it allows the cultivator to introduce clover in an early course, which would otherwise be choaked in its tender shoots by an abundant spring of grass.

That it secures the first crop from the ravages of the worm, which are found so abundant in the fresh turf.

That so far from ruining the staple of the soil, I have found land thus treated, retaining its fertility for five crops successively, without the additional stimulus of any other manure.

After

After all, I am ready to admit, that on a *thin* soil the practice may be injurious, and perhaps on *any* soil, if followed by an injudicious course of crops. On a strong loam, where the staple is sufficiently deep, it may be practised to advantage.

The rental of the parish of Enfield, on which the taxes parliamentary and parochial are taken, amounts to about 16,000*l.* per annum. The number of acres in the common fields and marshes you will find in the last survey. They both lett at about twenty shillings per acre.

The course of crops on the common fields: 1. fallow; 2. wheat; 3. spring corn;—when they are obliged to lie fallow again, being common every third year.

By inclosure, the marshes would admit of an immediate advance in rent of ten shillings, and the common fields of five shillings per acre. The annual loss in produce to the community by this triennial fallow, is equal to thirty shillings per acre, which, on 2,746 acres, the quantity of common field land in this parish, amounts to 4,119*l.* per annum.

The wages given by the farmers in this parish, are from ten to twelve shillings per week. In hay time, half a crown a day; in harvest, a guinea a week for the harvest month.

I remain, Sir,

Your most obedient humble servant,

ABRM. WILKINSON.

August 31, 1796.

NO. VII.

EXTRACT OF A LETTER FROM DR. WILKIN-
SON TO SIR JOHN SINCLAIR, BART.

SIR,

HAVING three hundred acres of land in my own hands in the parish of Enfield, I have been labouring to introduce a spirited agriculture. I have broke up one hundred acres of chase land, of which I sent an account to Mr. Young, for the Annals. Our farms in general, in this neighbourhood, are but small, the new inclosures excepted, which are held only by a few individuals.

I believe I am the largest landholder in the parish. Our agriculture is sadly restricted, by the common fields on one side and the chase on the other; which, united to the marsh land, constitute almost the whole of the parish. The cottagers are much in want of small fields of inclosed land; yet so attached are they to their idle system of keeping a few half starved cattle on the chase, often to the ruin of themselves and families, without the smallest advantage accruing to the public, that they constantly oppose any inclosure. In the spring the chase is covered with ticks, which fasten on the cattle, and, by sucking their blood, reduce them so low, that they are incapable of raising themselves from the ground, and in this state I have seen them carried away in carts. When I first purchased my estate at Enfield, as my fold-yard opened immediately on the chase, I imagined myself possessed of a treasure in this advantage, and accordingly purchased a number of black cattle; by which I lost so considerably,
that

that I never since have had any thing to do with them. The chase is only useful for keeping dry cows till within a month of calving. My milch cows would be starved on such coarse grass, which must certainly be improper for rearing cattle, unless it is for the benefit of the nation that the breed should degenerate instead of improve.

By my paper in the last number of the Annals, number 114, you will find that I had last year four quarters and a half of wheat from land which I found in this degraded state.

Sheep are prohibited from being turned out on Enfield-chase; and in the common fields they can only be kept in sufficient numbers to pay the expence of a shepherd. There are a few flocks kept by some of the holders of the common fields, but as they are kept principally for folding, they are of a very inferior kind. A large tract of common field land, watered by the New river, is condemned to be fallow every third year, which, if inclosed, might be converted into excellent meadow, and would lett immediately at forty shillings per acre.

Marl has lately been discovered on that part of the chase which lies contiguous to Potter's-bar, particularly on the farms of Mr. Byng, Mr. James, and Mr. Walker. Lime and chalk may be had at a short distance from Cheshunt and Northaw commons.

I am, Sir,

Your most obedient humble servant,

ABRM. WILKINSON.

White Webb House, Enfield-chase,

August 1, 1793.

NO. VIII.

LETTER FROM DR. WILKINSON, TO THE AUTHOR, ACCOMPANIED BY A MAP OF ENFIELD-CHASE, WITH EXPLANATIONS.

SIR,

INCLOSED I have sent the map which you wished to be forwarded. I have added the villas and buildings which have been erected either on the borders of the chase, or on the chase land, since the general division and inclosure.

Edmonton allotment has been entirely cleared of its timber and underwood. Enfield allotment is in many places well stocked with young thriving oaks. That part of the crown allotment which, though inclosed, has not yet been cultivated, you will find marked Fenny slade, Plumridge great lawn, and the triangular slip marked Sloper's pond, on the other side of the road, and bounded in part by the yellow line till it comes to the road above Monkey mead. The whole is in the occupation of one person, and contains about 750 acres, but is destitute of either house, barn, or farm offices. Hadley allotment has not been inclosed. I mention these circumstances, as it would be an improvement of the map, if the parts now lying waste and common were distinguished by a particular colour. I must observe, however, that the part of Hadley allotment, as marked in the map, behind Mr. Newdick's house (to the north of it) is now inclosed. Trent farm is chiefly wood, and therefore great part has never been broken up. It cannot, however, be called waste,

waste, as it has been converted into a park and ornamental pleasure-grounds.

Mr. Byng deserves much praise for his attention to agriculture. His property in the neighbourhood of South Mims has been much improved by the application of marl; and a spirited system of husbandry has been introduced by a son of the justly celebrated Duckett.

I remain, Sir,

Your most obedient humble servant,

ABRM. WILKINSON.

NO. IX.

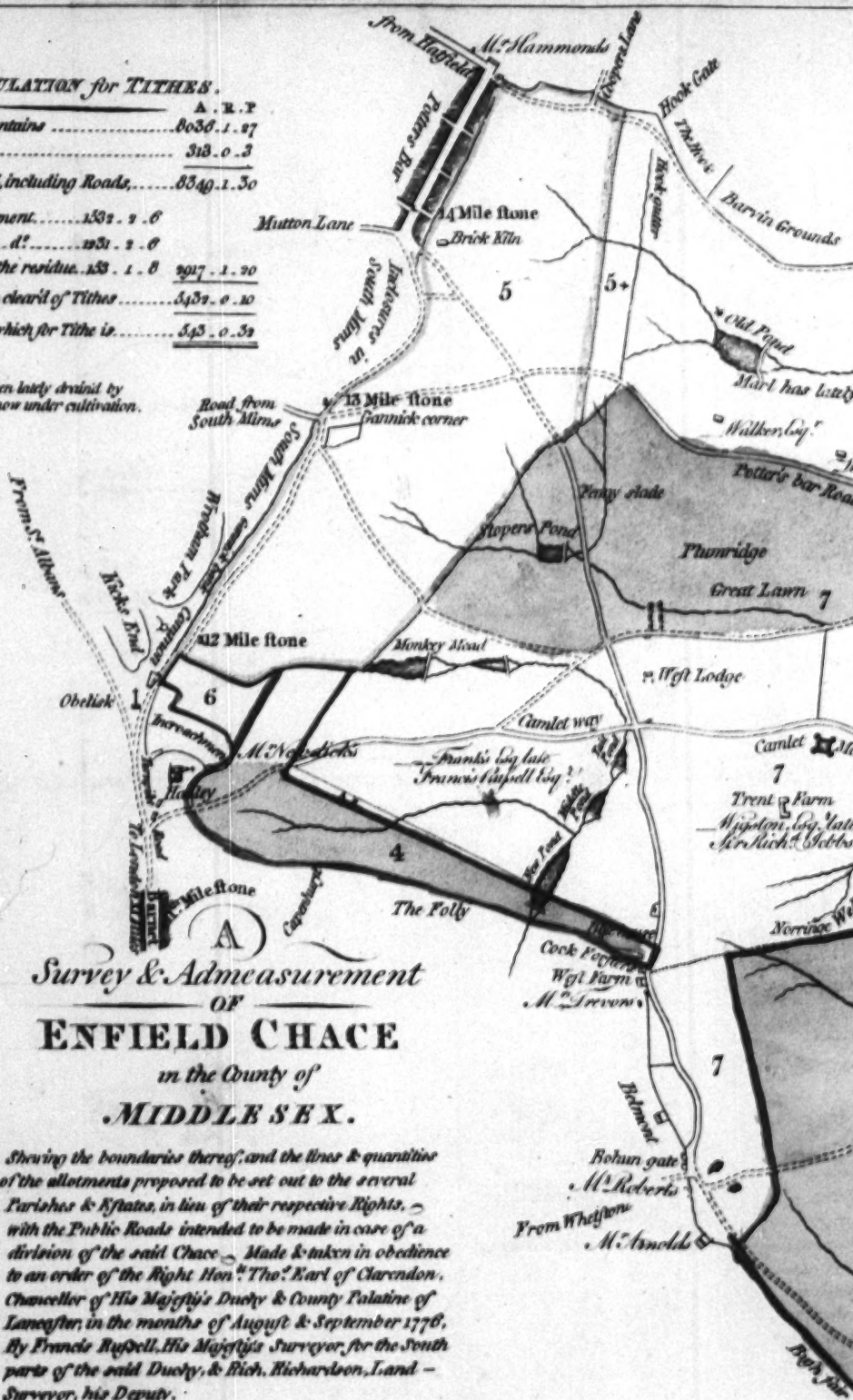
MAP OF ENFIELD-CHASE,

COPIED FROM DR. WILKINSON'S, WITH THE PARTS
LYING WASTE DISTINGUISHED BY A PARTICULAR
COLOUR, AS RECOMMENDED BY HIM.

CALCULATION for TITHES.

	A. R. P.
The Chace contains	8036.1.27
The Lodges	313.0.3
Total, including Roads,	8349.1.30
Finfield allotment	1531.2.6
Edmonton	1931.2.6
Roads, over the residue	153.1.8 2917.1.20
To be cleared of Tithes	3431.0.10
1/2 of which for Tithes is	343.0.33

* This Pond has been lately drained by M^r. James, and is now under cultivation.



Survey & Admeasurement OF ENFIELD CHACE in the County of MIDDLESEX.

Shewing the boundaries thereof, and the lines & quantities of the allotments proposed to be set out to the several Parishes & Estates, in lieu of their respective Rights, with the Public Roads intended to be made in case of a division of the said Chace. Made & taken in obedience to an order of the Right Hon^{ble} The Earl of Clarendon, Chancellor of His Majesty's Duchy & County Palatine of Lancaster, in the months of August & September 1776, by Francis Rydell, His Majesty's Surveyor, for the South parts of the said Duchy, & Rich. Richardson, Land-Surveyor, his Deputy.

17	Esfield allotment colorid blue subject to Tithes contains	A. R. P. 1659. 9.0
2	Old Park allotment colorid brown clear of Tithes	30.0.0
3	Kidlington allotment colorid green subject to Tithes	101. 9.0
4	Hadley allotment colorid brown clear of Tithes	108. 0.0
4	For the Tithes of Hadley allotment	24. 0.0
5	South Mine allotment colorid yellow clear of Tithes	999.3.00
5	For the Tithes of South Mine allotment	108. 1.0
6	Allotment to Old Fold colorid purple clear of Tithes	56. 2. 24
6	For the Tithes	41. 0.0
7	Allotment to the King	366. 1. 10
8	Allotment to discharge the Chace from Tithes, (except Esfield and Kidlington allotment)	463. 0. 25

U.S. Needs Study! Demand

NO. X.

LETTER FROM J. WIGSTON, ESQ. TO THE
AUTHOR, RELATIVE TO THE SOIL AND
CULTIVATION OF ENFIELD-CHASE.

SIR,

I CAN only furnish you with an account of the soil of my estate, and the lands contiguous, situated on Enfield-chase, which is *cold, springy, and unpromising in the extreme*, as is the case with many hundred acres circumjacent with my park, now belonging to the parishes of Enfield and Edmonton, and *very properly used as commons, for the growth of young stock*. I have cultivated several spots in my own park, at a great expence, having invariably found it necessary to lay out as much as the *fee simple* of the *land was worth*, in order to render it capable of bearing a crop of corn. How far my future labours may be rewarded, I know not; but I am convinced, that the whole of Enfield-chase is *infinitely more appropriate* to the feeding and growth of young stock of every description, than the plough.

I am, Sir,

Your obedient servant,

J. WIGSTON.

Trent-place, Enfield-chase,
Sept. 8, 1796.

NO. XI.

PLAN OF AN ORCHARD.

NO. XII.

ON NEWBURY PEAT ASHES. IN A LETTER
TO THE AUTHOR.

SIR,

THE ashes are a guinea per hundred in the place. The freight to Kingston, Surrey, will be a guinea and an half more. *We dress our clover and new sown grass seeds with ashes, and sow about ten or twelve bushels per acre; they will also do for meadow land; I have known them sown on wheat; but they are very apt to blight. They do very well on vetches.*

I am your humble servant,

RD. CROCKFORD.

Englefield, Feb. 9, 1794.

NO. XIII.

ON SOOT, MALT-DUST, &c. IN A LETTER TO
THE AUTHOR.

RESPECTED FRIEND,

THE usual quantity of soot sown per acre, as top-dressing, is about forty bushels. I think to increase it to sixty; if land is poor, it may be done with advantage to

the crop. The time of sowing I believe, cannot be better fixed than the latter end of this month, or the fore part of the next; although some farmers are of the mind, that a little later is better, as they believe frost is detrimental to soot; and if land lays much on a descent, it is more liable to be drove away by floods.

The quantity of kiln dust that I make use of, is from fifty to sixty bushels per acre; but generally use it for barley; if for wheat, about the same quantity, and the usual time of sowing is the same as soot. I have sometimes sown malt-dust at the time of sowing the wheat, but in a mild winter it is apt to work too soon; of course leaves off too soon also. I have had but little experience with respect to grass land, but I am of opinion both soot and kiln-dust may be sown with advantage. Have heard that soot made use of on clover, answers very well. I have this year sown three hundred and twenty bushels of soot with the wheat, and ploughed it in at the same time, on about six acres of poor land, after a summer's fallow, and new land drained, but cannot see any effect from it at present. The remaining part of the piece is dressed with other manure from London, viz. a part squib, and a part mince-meat, at about the same expence per acre, but appears far the best at present.

Conclude with respects, thy sincere well-wisher,

JAs. LUCAS.

*Brickendon-bury,
2d Month, 11th, 1794.*

NO. XIV.

MODE OF FATTENING CATTLE WITH MOLASSES. BY L. MILLINGTON, ESQ. IN A LETTER TO SIR JOHN SINCLAIR, BART.

SIR,

As you did me the honour, yesterday, to request that I would put down on paper, the substance of some little observations I had made on the fattening of cattle expeditiously, by the addition of molasses to their common food, I now sit down to do so, but with great diffidence. It has been my practice, and pretty generally that of my neighbours, to give from half a pint to a pint of molasses, twice a day, to a very poor ox, that has been worked for ten, twelve, or fifteen years in the yokes, till he could scarcely stand. The mode of giving the molasses is, by putting a gallon of Indian corn, oats, or any refuse or damaged corn, roughly ground, or potatoes, into a pot of boiling water, just enough to form it into a thick mash, or pudding-like substance, called by the negroes in Barbadoes *coocoo*. It is well stirred with a long wooden spoon, till nearly cool, to prevent its burning to the sides of the iron pot. When cold, it is made into balls, or lumps, of about a pound weight. Half of these balls is given to an ox morning and evening, dipping each into the molasses, which, after a few days, is eaten with great avidity, and very quickly fattens the ox, with the addition of a little hay, or any green fodder, not too succulent or flatulent. A spoonful or two of salt is generally dissolved in the water. When ground corn is not used, the dry food,

food, such as cane tops, tedded or withered in the sun, dried guinea grass, or oil-cake, is well wetted with the same quantity of molasses, diluted with as much water, and some salt dissolved in it.

With great respect, I am, Sir,

Your obedient humble servant,

LANGD. MILLINGTON.

Berners-street, April 3, 1795.

NO. XV.

AN ACCOUNT OF A DUTCH DAIRY. BY THE
REV. MR. TICKELL.

SIR,

THE economy of the Dutch, in the management of their milch cows, being recommended in one of the Agricultural Reports, as an object worthy of enquiry, I take the liberty to send you such previous information on the subject, as my cursory notes, made some years since on the spot, furnish me with, on the inspection of three great cow-houses, at Utrecht, Harlaem, and Amsterdam, which were constructed on an oblong square, and of a moderate height, with a slight floor over head, for a certain occasional quantity of hay cut out of a Dutch barn adjoining the cow-house. The building within was airy and luminous; its length determined by the number of the cows, which might amount from forty to sixty, or more, and from three to four feet allowed to each cow—its breadth
from

from thirty to forty feet, which may thus be distributed: twelve feet in the centre, between two rows of cows, including a sloping gutter on either side, in the front of, and in a line with, the heads of the cows; five feet on either side for their standing, and immediately behind their tails a gutter two feet wide, and nearly as many deep, and also a four feet walk on either side, behind each gutter. The centre walk is paved with clinkers, and kept very clean, and *sanded*, between which and the two sloping channels, paved likewise with clinkers (one in each front row of cows) is a thick board, a foot and half high, fixed edgeways, to keep the hay, &c. on which the cows are fed, within the bounds of the channel. The cows are tied up with a slight chain, or rope round the neck, fastened to an iron ring, running up and down a fixed post; under the standing of the fore and hind feet of the cows, fir timber, a foot and half wide, is extended the whole length of the house (as stone, or any harder substance, would probably founder their feet) and the interval filled up with a floor of sand and lime, gradually depressed towards the middle, the better to receive the incumbent belly of the cow. The timber, on which the hind feet stand, is rather higher than that in front, both to enable the cow to reach her meat the more easily, and likewise to eject her excrements the more cleanly. Each cow's tail is platted, and, to promote cleanliness, tied by a slight cord fastened to a narrow slip of deal, nailed above, which prevents their flourishing their tails, but not their lying down.

Their food is hay, with repeated warm messes of grains, boiled turnips, potatoes, cabbage, refuse carrots, oil-cake, buck-wheat, &c. &c. which are placed before them in the front channel above-mentioned, at the upper end of which is fixed a pump to supply them with water, which they drink,

drink, as it glides gently down before them in the said channel; and in very cold weather, the pump water is tempered with hot water. In order to remove the excrements in the gutter before-mentioned, a square board, fixed in a long handle, the exact breadth of the clinker-paved gutter, is used, with which they are pushed down the gutter, and through an opening at the extremity of the house, into a deep pit made to receive them; and afterwards, by means of a long spout, water is conveyed from the pump into the gutter, which is washed perfectly clean, twice, or oftener, in the day; as also is the channel in front of the cows. As the cows remain constantly tied up, from the time they return from pasture to their winter quarters, in November or December, according to the season of the year, till they go to grass in April, it is surprising, from this arrangement and economy, with what facility and thrift a great number of cows are taken care of by a very few hands; and also with what neatness, though they are allowed no litter, but what little refuse hay is left by them. The eye of the master indeed is always upon them, for at the upper end of their house he also has usually his abode, divided only by a running curtain, but fitted up with every convenience, and in the neatest manner, for conducting the dairy, as coppers for boiling water, and the various messes for the cows, &c. In short, no people on earth (the Chinese not excepted) study and practice the "*multum in parvo*" more assiduously, and with greater success, than the patient, industrious, frugal, provident Dutchman, among whom many ingenious contrivances in all arts and professions are to be found, worthy the imitation of the most enlightened nations. When the cows go to grass, they are clothed, (at least those which are tender, or have lately calved) with a coarse hempen *jacket* extending from the shoulders

to

to the rump, and half way down the ribs, and fastened by strings under the legs; the intention of which is to guard those which are tender, &c. after their winter's confinement, from the perpendicular dews, which are very heavy in their low, deep, rich meadows, and likewise to increase their milk, which warmth very essentially contributes to. The same precaution is adopted, I understand, in winter, before they return to house, if the weather is severe, or when a cow calves late. While at grass, their keepers avail themselves of every opportunity to supply them with brewers wash, &c. which from habit they drink greedily, in preference to such unpalatable (if not brackish) water as their dykes usually afford.

After the cows quit their winter quarters, their house is cleaned with the greatest niceness, and even the boards washed, and scoured with hot water, sand and soap; but notwithstanding all this neatness, and the constant care and attention of their owners, it sometimes happens, as in 1772 and 1773, that they lose the greater part of their stock: the bowels were generally first attacked, and that so violently as to prove fatal in a few hours. This distemper then prevailed not only in the cow-houses, but pursued the poor animals to their pastures, in one of which half the herd would be swept off in a few days, and all escape perhaps in that adjoining; while in a third neighbouring pasture the distemper raged with equal violence as in the first. No less various was the conduct of the several proprietors on this occasion—some considered the distemper as a judgment from heaven, and thought it in vain, if not impious, to attempt any means for their recovery. Others, less superstitious, adopted the most celebrated remedies, and left no means unessayed to oppose the virulence of the distemper, but with little success. It is remarkable, that the cows in Flanders are
generally

generally very healthy, notwithstanding they lie on their dung, more or less, the year round. The Flemish peasant keeps his cattle rather in a cave, than a cow-house, and instead of carrying out the dung, fresh litter, and dry sand, or earth, is added daily to it, so that before this cave, or cow-house, is cleaned out, the cattle stand six feet or more, higher than the floor. His milch cows (as well as horses) are housed every night, even in the summer, and are fed with trefoil, or clover, or vetches, &c. and let out to feed in the pastures early in the morning, and brought back to house about ten; have trefoil, &c. till four in the afternoon, and are then turned out till eight; by which means an immense quantity of the richest manure is raised in Flanders during the whole summer, which, by cattle being kept in the fields in that season in all other countries, becomes the food of flies, and the sport of winds. Fattening bullocks alone are permitted to lie abroad day and night in Flanders, otherwise they would not fat in very hot weather. In winter, the Flemings feed their cows with hot messes, &c. nearly as the Dutch do.

Such is the substance of what I have been able to glean from my very imperfect notes, hastily penned down, respecting the economy of the Dutch in the management of their cows. It is very probable, that I may have been mistaken in what I saw; and mis-informed in the enquiries I made; I can only answer for the purity of my intentions—a desire to add my mite to the treasure of agricultural information now collecting, and to render the situation in winter, of that most useful animal the (London) cow, more cleanly and comfortable, and to enable her to afford a more ample supply of that necessary and most wholesome article of milk.

Considering the most ruinous consequences which followed lately at Ratcliffe, from so trifling a cause as the
boiling

boiling over of a cauldron of tar, I shall make no apology for troubling you with an easy precaution, long adopted by the Dutch, to obviate a similar misfortune; your patronage and recommendation of which, would ensure its adoption in naval yards, to the great advantage and security of the community. Over every tar cauldron is fixed a large wooden hutch, cased (or at least it should be) with thin iron plates; this is filled with fine sand, which, in case the tar happens to take fire in boiling, the man who superintends the operation lets out by means of a trap (or sliding door), and the fire is instantly subdued by a deluge of sand—the tar, though combined with the sand, still remaining equally serviceable for a variety of inferior uses. This contrivance I observed in the rope-yard at Amsterdam, belonging to the Dutch East India Company. Adjoining to the cauldron, which was fixed in strong brick work, is a long room, divided from the cauldron without by a thick brick wall, in which is fixed a large iron stove (advancing considerably into the room) to heat the tar cauldron, which throws out a great heat in the room below, and up into a chamber above, which, instead of a regular floor, has only thick deal spars, three inches apart, nailed down on the beams. Here, and in the room below, a great quantity of cables, and ship tackling of all sorts, is coiled up and dried, before they are tarred. The cables and ropes are not worked up so *tort*, or tight, as with us, in order to render them more elastic, and not so liable to strain or break in heaving the anchor, and the ropes less apt to strain the yards and top-masts in wet, tempestuous weather.

I have the honour to be, Sir, &c. &c.

J. TICKELL.

Wargarave, Dec. 1794.

THE METHOD OF MAKING BUTTER IN HOLLAND.

BY MR. R. P. CAREW.

Having milked the cow, the milk is not put into pans till it is quite cold. It is then stirred two or three times a day with a wooden spoon, to prevent the cream from separating from the milk; and if it can be stirred till the spoon will almost stand in it, it is deemed so much the better. When it is found to be sufficiently thick, it is put into the *churn*, and beat for an hour. When the butter begins to form, a pint or more of cold water, according to the quantity of the milk, is poured in, to separate the butter from the milk.

When the butter is taken out of the churn, it is washed and kneaded till the last water is *perfectly clear* and free from milk. By this method, a greater quantity of butter is made from an equal quantity of milk. The butter is firmer and sweeter. It will keep longer than that which is made in the ordinary mode, which is in use in England, and the butter milk is thought preferable.

N. B. A churn is thought better adapted to the purpose, than a barrel.

NO. XVI.

CUTTING-BUTCHERS.

The committee to whom the petition of the cutting butchers was referred, in the winter of 1795-6, reported to the House of Commons their opinion thereon as under.

It appears by the evidence of several respectable cutting-butchers, that great part of the evil complained of, originates from the practice of *jobbing*. The *jobbers* buy cattle of the farmers and graziers, which would come from them to market, were they not prevented by these people; that more than half the cattle, particularly beasts that come to the Smithfield market, are *jobbed*—That a Mr. L. and Co. of Norwich had, during the spring of 1795, *jobbed* upwards of 1000 cattle, by which they must have cleared at least 2000*l*. It appears also, that there could no inconvenience arise from entirely abolishing this practice, as there are drovers for the purpose of bringing the beasts to market, who call regularly for the stock, and bring it to the London markets. It appeared that the *jobbers* rode about the country, and if they found a grazier not inclined to sell them his cattle, but determined to send them to Smithfield himself, they frequently tempted him with the offer of prices more than they were really worth, in order to get the stock into their own hands. That the salesmen are frequently bid a very good price for cattle by the butcher, which they are compelled to refuse, as they know the *jobbers* had been with the graziers and offered more. That the road up to London is so infested with

the *jobbers*, that it is with the greatest difficulty the graziers can get their cattle to market, although the drovers have positive orders to drive them thither. That it is the general opinion, that three-fourths of the cattle that are sold in Smithfield are *jobbed* before they come there; and that not unfrequently they are *jobbed* three or four times previous to their arrival at the London markets. That *jobbing* is become now so prevalent almost all over the kingdom, that the *jobbers* have obtained the command entirely over the graziers, and can enhance or depress the price at their pleasure. That it is the particular wish of the salesmen that the practice of *jobbing* were totally abolished, as it occasioned such confusion in the country; and if they could have the cattle immediately from the grazier to the market, the price would be much reduced. That the *jobbers* make use of this argument to the graziers—"that the stock would fetch more than if kept five or six weeks longer;" that if they find the graziers still disinclined to sell, they tempt them by a price far more than they even intend to give; the consequence of which is, that when the stock comes to Smithfield, the salesman not being able to get as much for them as the graziers were bid in the country by the *jobbers*, the graziers are by that means induced to part with their next lot at a price certain, lest they may be a second time disappointed at the London markets. That sheep which are offered for sale, are frequently with-held from the butcher till the *jobber* has had the refusal; after which they are sold, not on the grazier's, but on the *jobber's* account.

On the examination of several eminent salesmen, this testimony was corroborated, with the additional circumstances, that the enormous price given for lean cattle, is entirely owing to the practice of *jobbing*; as likewise the great addition to their price in all the country fairs; that the

the *jobbers* make between two and three pounds per head of cattle; that it has been customary for cattle to be bought on one side of Smithfield, and immediately tied up for sale on the other, by which an advance is obtained of two or three pounds per head in a short space of time; that great quantities of cattle are sold at Hounslow, Knightsbridge, Islington, and other resting places for the cattle, where they are met by the *jobbers*, and purchased the day before the market-day. That before the practice of *jobbing*, the markets were as well supplied, and at a lower price. This practice was fully proved by the evidence of several drovers, one of whom said, that out of eight hundred sheep which came from Mile End, above six hundred were sent to the carcass-butcher, without being driven to market. That it has happened more than once, that cattle have been bought in a fictitious name, and sold again the same day, in the same market.

Another unfair practice tending to enhance the price of veal, was proved by the clerk of Smithfield market, who said that it was customary "to bring calves into the market the evening before the market-day; that they are taken in carriages down the inn-yards, where they are sold without ever being brought into open market, to the amount of 1000 to 1500 a year; and that he, as clerk of the market, has no right to notice them, the inn-yards being no part of the market."

Enormous as it may appear, the following evidence was given:—"That the *jobbers* frequently boasted of their profits, which one in particular declared, amounted in one instance to no less a sum than *seven pounds* upon one bullock!!!"

Upon consideration of all which circumstances, the committee have come to the following resolutions:

- “ 1. That the practice of carcass-butchers, in monopolizing Smithfield and other markets, is one cause of the dearth of butchers’ meat within the bills of mortality, which practices have of late years much increased, and therefore the trade of carcass-butchers ought to be regulated.
- “ 2. That the practice of *jobbers* and others, who buy cattle and sheep on speculation, which are afterwards sold at advanced prices, several times before they are purchased by the cutting retail butchers (by which several unnecessary profits are obtained between the farmer and consumer) are principal causes of the dearth of butchers’ meat within the bills of mortality: these practices having increased of late years to an excessive height, ought to be abolished.
- “ 3. That forestalling and regrating tend greatly to enhance the price of meat; and that these practices having increased of late years, to the great detriment of the public, ought to be more effectually prevented by a summary mode of conviction.”

NO. XVII.

NAVIGABLE CANALS.

1.—THE first advantage of canals is, that they tend to employ capital that would otherwise lay dormant, perhaps in the Bank, or in the coffers of bankers, or, which is indeed more probable, might be sent to other countries, in purchasing the stocks or the landed property of other nations, or in carrying on speculations or improvements there, either in manufactures or in agriculture.

2.—The next advantage is, that the making of canals gives employment to a number of industrious persons, who are not shut up in close unwholesome rooms, which is the case with manufacturers in general, but who are employed in the open air, in the healthy labours of the spade.

3.—A third advantage is, that it carries down industry and capital to remote and distant corners of the country, and indeed puts the whole kingdom on a footing of equality in regard to the raw materials of manufacture; every species of provision, every sort of manure, and, above all, fuel, without which no country situated in a northern climate can possibly flourish.

4.—The superior cheapness of conveyance is an incredible advantage. The expence of bringing goods on turnpike roads, is one shilling per ton per mile; whereas by canals it costs only about two-pence or three-pence*.

* The carriage of bulky articles over a turnpike road, costs from a shilling to fourteen or fifteen pence per mile; by canals, from one-halfpenny to three-halfpence.—*J. M.*

The saving of three-fourths in the expence of carriage, particularly in bulky articles, and raw materials, is an astonishing advantage both to trade and agriculture.

5.—In a commercial country, diminishing as much as possible the land employed in maintaining horses, is of great advantage. It is commonly calculated, that it requires from eight to twelve acres to make a mile of canal*, and that on such a canal one horse will drag a barge, with from forty to fifty tons; whereas, on a turnpike road, a horse does not draw above three-fourths of a ton. Suppose, however, that the saving is equal to forty horses; each horse, it is supposed, will require the produce of six acres at an average, to maintain him in hay, oats and beans; consequently, in the first place, two hundred and forty acres may be dedicated to rearing the food for man instead of horse. If each horse costs thirty pounds a year for tear and wear and maintenance, there is thence a saving of 1200*l.* per annum, in addition to which, there is the saving of the tear and wear of the carts, of the roads, the expence of drivers, &c. It is certain, that if Holland was to carry in carts and waggons all the goods which it transports by canals, the whole territory belonging to that country would not be able to raise food sufficient to maintain the horses to do the duty required.

Lastly.—A number of other advantages might be mentioned, as the cheap conveyance of lime, and other manures, for the cultivation of the soil: the conveyance of timber for His Majesty's navy, from the most interior parts of the kingdom; the advantage of watering the ground in the neighbourhood.

Canals may be divided into three different sorts. The first, when it is done entirely by the people of the country

* It is unnecessary for a mile of canal to occupy more than four acres.—

through whose grounds the canal passes. Secondly, when it is done partly by the country, and partly on speculation. Thirdly, when it is done entirely on speculation. Of these, the second is in general the most useful to the country. When canals are executed by the inhabitants of the neighbourhood, they are in general planned on a small scale, and imperfectly executed; but when undertaken by persons who do it with hopes of profit, it is done in the best manner, and with a much better chance of success: indeed the people of the country itself, have seldom either spirit or capital to do justice to such undertakings.

The objections which have been made to canals, on the score of gambling, can easily be removed, by regulations respecting subscriptions, &c.

As to the objection on the score of its injuring the coasting trade, nothing can be more ill-founded. The coasting trade has been increasing every year since canals have been so much multiplied: many articles are carried from one port to another, that would never have been brought by sea, had it not been for those canals. For instance, the stones employed in the pavement of the streets of London, are in a great measure brought from the interior parts of Yorkshire.

Many persons are prejudiced against canals, on account of the exorbitant profits which some of them have produced; but they do not consider how many there are, which, though highly profitable to the public, yet produce little advantage to the adventurers, who perhaps may be equally concerned in those which are profitable and those which are otherwise; so that the one is necessary to make up the loss that is sustained by the other. Besides, people do not consider the many accidents to which navigations are liable, by blowing up, by a change of trade in the place, and, above all, by the rising up of rival canals.

NO. XVIII.

ON THE BENEFICIAL EFFECTS OF STEAMING
GRAIN. BY JOHN LIGHT BANGER, ESQ.
OF MADEIRA.

EXTRACTS FROM SUNDRY LETTERS.

13th July, 1794.—“ You will remember Mr. P—’s proposal, that we should each take a given quantity of the same cargo of grain, and that at the expiration of a certain time, his method of preservation should be found superior to mine. It is now six months since we commenced our experiments, and upon weighing an alquiere (a measure used in the island of Madeira, $2\frac{1}{2}$ of which make an English bushel), the weight of his was found to be 17 lb. 15 $\frac{1}{2}$ oz.; of mine 20 lb. 2 $\frac{1}{2}$ oz. But the essential difference was in the quality, as the grain kept by him was unsaleable, and mine better and sweeter than when I received it.”

24th September.—“ I was much obliged by your account of the produce of the island of St. Michael’s; but I omitted, when you left me, to request that you would inquire into the manner there practised for keeping grain. I am anxious for intelligence upon this subject, from observing that grain from that island cannot be preserved so long a time as what is imported from any other country: of this, I have recently obtained sufficient experience, by having ordered a part of a cargo of grain to be placed in a store which had lately been used with island wheat,
and

and from this cause, in a very short time it is become badly infected with weevil. Mr. V. who purchased a part of the same cargo, is, from a similar cause, a fellow sufferer. I am not, however, anxious respecting it, as the grain I purchased from Mr. P. and steamed once on the 1st January, and again on the 1st June, is now in perfect preservation, and free from weevil. The Indian corn that I purchased from Mr. M. in March last, at which time it was very full of insect, is at present free and perfect without a second heating. I intend, however, passing it again, as soon as I have fixed my copper in stone work, and make no doubt of its keeping through the year. I am examining with great attention, a particular tendency that the grain lately arrived has to the generation of insect; I imagine it to proceed, in some degree, from the embargo laid upon American vessels having obliged the merchants in the different sea-ports to keep their granaries so full as to have heated the grain; but I have some reason to think, that the months of March and September are attended with peculiar circumstances respecting weevil.

“ Since you left me, I have weighed the quantity of coal consumed in a day by the kitchen portable steam apparatus you sent me, and find it one hundred pounds. With this trifling copper I can steam three moys (or seventy-two bushels) in the common hours of work of one day.”

9th December.—“ My experiments with steam succeed well: I have lately steamed a granary of sixty moys (or 1440 bushels) in about three weeks. I find the waste of grain, not badly infected with weevil, to be one per cent. in weight in one month, and the increase so rapid, that if proper precautions are not taken, in less than

than six it will be rendered totally unfit for use. In the West Indies, I am satisfied from my own experience, that three months will be equal in destruction to the grain, to six in this temperate climate. Perhaps no part of the world would experience so much benefit from the use of steam as a rice country: I have several rice experiments at present under my observation, the result of which I shall transmit to you."

27th January, 1795.—" I have the pleasure to inform you, that I have at last succeeded in procuring tubes sufficiently tight, by changing from tin to copper, and although I do not apprehend any dangerous consequences from this use of copper, yet to prevent any observations being made upon the possible injury to the health, &c. I have ordered the tubes to be tinned. I think copper a better metal than tin for my purpose; but it is probable that you or your friends may be able to point out something preferable to either; for you will remember that economy induced me to begin with tin, though my afterwards adopting copper has, I believe, increased my expence at least five-fold.

" My experiments with rice succeed well; they remain free from dust. I believe I have already mentioned to you, that I apprehend steam may be rendered very serviceable in separating the husk from the grain, as barley, rice, &c. and I do think it may be extended to flax, and many other things.

It has escaped me to relate to you a circumstance that has lately particularly attracted my attention. Having sown some grain that had been steamed, I found, to my surprize, that it grew: I accordingly repeated my experiment, and it was attended with equal success. The very flourishing state of what is come up, and my own observations,

vations, lead me to think that blight in wheat might be materially prevented by steaming it previous to its being sown; for if, as the French farmers imagine, the disorder which they call *la carie* (and which I believe is nearly the same as what in England is termed the *smut*) proceeds from the egg of the insect, or from any thing in the grain before it is deposited in the earth, there is no doubt in my mind, that steaming it would be an effectual preventative.

“ I have lately taken an alquiere of wheat that had been steamed, and another that had not. On sending them both to the mill, I find an increase of near five per cent. in the bread produced from the wheat that was steamed. I do not at present certainly know if this difference would have arisen, if the latter had been dried in the sun, or in an oven, as is sometimes practised here; it is a system that is not, I believe, common in England; and even here is attended with considerable trouble. The best bread made here, is a mixture of fine American flour and island wheat; and I have no doubt, that if a baker made use of steam, he might, in the proportion of wheat in the quartern loaf, save from five to ten per cent. When I am a little at leisure, I shall try the advantages to be obtained by steaming seeds to be sent to foreign countries. Biscuit, I am convinced, may be kept any space of time; but from its size, the operation of steaming it is considerably more difficult than grain. In general, I have to observe to you, that the wheat purchased of Mr. P. in January 1794, is better than when I received it. The Indian corn purchased of Mr. M. in March is perfect, and free from weevil; as is also a part of the cargo brought by Capt. Hogg. Sixty moys of the prize wheat is now selling easily at 700 dollars, at the same time that Mr. V. who purchased a part of the cargo, has with difficulty been able to obtain 650 dollars.”

28th March.—“ The flourishing state of the wheat sown after being steamed, surprizes every person to whom I have shewn it, and I think it an object well worthy attention.”

NO. XIX.

THE PAPER ALLUDED TO IN PAGE 3, AS NO. I,
OF THE APPENDIX.

THE parishes of Middlesex, so far as they have come to my knowledge, are as follows, viz.

1st, Ninety-seven parishes within the walls of the city of London.

- | | | |
|----|--------------------------------|--------|
| 1 | St. Alban, in Wood-street | R |
| 2 | Alhallows, Barking | V |
| 3 | Alhallows, in Bread-street | R |
| 4 | Alhallows the Great | R |
| 5 | Alhallows, in Honey-lane | R |
| 6 | Alhallows the Less | Curacy |
| 7 | Alhallows, in Lombard-street | R |
| 8 | Alhallows, Staining | R |
| 9 | Alhallows, on London-wall | R |
| 10 | St. Alphage, near Sion-college | R |
| 11 | St. Andrew Hubbard | R |
| 12 | St Andrew Undershaft | R |
| 13 | St. Andrew by the Wardrobe | R |
| 14 | St. Ann, within Aldersgate | R |
| 15 | St. Ann, in Black-friars | R |
| 16 | St. Anthony | R |
| 17 | St. Augustin, alias Austin | R |
| | 18 St. Bar- | |

- 18 St. Bartholomew, by Exchange R
- 19 St. Benedict
- 20 St. Bennett, Gracechurch R
- 21 St. Bennett, at Paul's-wharf R
- 22 St. Bennett, Sherehogg R
- 23 St. Botolph, at Billingsgate R
- 24 Christ-church V
- 25 St. Christopher's R
- 26 St. Clement's, near East-cheap R
- 27 St. Dionis, Back-church R
- 28 St. Dunstan in the East R
- 29 St. Edmund the King R
- 30 St. Ethelburga's R
- 31 St. Faith, under St. Paul's R
- 32 St. Gabriel, in Fenchurch-street R
- 33 St. George, in Botolph-lane R
- 34 St. Gregory, by St. Paul's R
- 35 St. Helen, near Bishopsgate V
- 36 St. James, in Duke's-place
- 37 St. James, at Garlic-hithe R
- 38 St. John Baptist, by Dowgate R
- 39 St. John the Evangelist R
- 40 St. John Zachary R
- 41 St. Katherine Coleman R
- 42 St. Katherine Cree-church V
- 43 St. Lawrence Jury V
- 44 St. Lawrence Pountney Curacy
- 45 St. Leonard, in East-cheap R
- 46 St. Leonard, in Foster-lane R
- 47 St. Magnus, by London-bridge R
- 48 St. Margaret, in Lothbury R
- 49 St. Margaret Moses R
- 50 St. Margaret, in New Fish-street R
- 51 St. Margaret Pattens R

52 St. Mar-

- | | | |
|----|---------------------------------------|---|
| 52 | St. Martin's, in Ironmonger-lane | R |
| 53 | St. Martin's within Ludgate | R |
| 54 | St. Martin Orgars | R |
| 55 | St. Martin Outwich | R |
| 56 | St. Martin Vintrey | R |
| 57 | St. Mary Abchurch | R |
| 58 | St. Mary Aldermanbury | R |
| 59 | St. Mary Aldermay | R |
| 60 | St. Mary-le-bow, in Cheapside | R |
| 61 | St. Mary Bothaw, at Dowgate | R |
| 62 | St. Mary Colechurch | R |
| 63 | St. Mary Hill, near Billingsgate | R |
| 64 | St. Mary Magdalen, in Milk-street | R |
| 65 | St. Mary Magdalen, in Old Fish-street | R |
| 66 | St. Mary Mounthaw | R |
| 67 | St. Mary Somerset | R |
| 68 | St. Mary Staining | R |
| 69 | St. Mary Woolchurch | R |
| 70 | St. Mary Woolnoth | R |
| 71 | St. Matthew, in Friday-street | R |
| 72 | St. Michael Bassishaw | R |
| 73 | St. Michael, in Cornhill | R |
| 74 | St. Michael, in Crooked-lane | R |
| 75 | St. Michael, at Queenhithe | R |
| 76 | St. Michael-le-quern | R |
| 77 | St. Michael Royal | R |
| 78 | St. Michael, in Wood-street | R |
| 79 | St. Mildred, in Bread-street | R |
| 80 | St. Mildred, in the Poultry | R |
| 81 | St. Nicholas Acons | R |
| 82 | St. Nicholas Coleabby | R |
| 83 | St. Nicholas Olave | R |
| 84 | St. Olave, in Hart-street | R |
| 85 | St. Olave, in the Old Jewry | V |
| | 86 St. Olave, | |

- 86 St. Olave, in Silver-street R
- 87 St. Pancras, in Pancras-lane R
- 88 St. Peter, in Cheapside R
- 89 St. Peter, in Cornhill R
- 90 St. Peter, near Paul's-wharf R
- 91 St. Peter-le-poor, in Broad-street R
- 92 St. Stephen, in Coleman-street V
- 93 St. Stephen, in Walbrooke R
- 94 St. Swithin, at London-stone R
- 95 St. Thomas the Apostle R
- 96 St. Trinity R
- 97 St. Vedast, alias Foster R

2dly, Eleven parishes without the walls, but constituting part of the city of London, viz.

- 1 St. Andrew, in Holborn R
- 2 St. Bartholomew the Great R
- 3 St. Bartholomew the Less V
- 4 St. Botolph, by Aldersgate R
- 5 St. Botolph, by Aldgate Curacy
- 6 St. Botolph, without Bishopsgate R
- 7 St. Bridget V
- 8 St. Dunstan in the West V
- 9 St. Giles, by Cripplegate V
- 10 St. Sepulchre's V
- 11 Trinity, in the Minories Curacy

making together 108 parishes within the freedom of the city of London.

3dly, Ten parishes or places within the city and liberties of Westminster, viz.

- 1 St. Ann
- 2 St. Clement Danes R
- 3 St. George's, Hanover-square R
- 4 St. James

- 4 St. James R
- 5 St. John the Evangelist R
- 6 St. Margarer's R
- 7 St. Martin in the fields V
- 8 St. Mary-le-Strand R
- 9 The precinct of the Savoy
- 10 St. Paul, Covent-garden

4thly, Eighteen parishes, situate out of the said cities and liberties, but within the bills of mortality, viz.

- 1 St. Ann, Limehouse R
- 2 Christ-church, Spitalfields R
- 3 St. Dunstan, at Stepney R
- 4 St. George's, Bloomsbury
- 5 St. George's in the east R
- 6 St. George's in Queen-square
- 7 St. Giles's in the fields
- 8 St. James, Clerkenwell
- 9 St. John, Clerkenwell
- 10 St. John, Hackney R
- 11 St. John, at Wapping R
- 12 St. Katherine, near the Tower
- 13 St. Leonard, Shoreditch V
- 14 St. Luke, Middlesex
- 15 St. Mary, Islington V
- 16 St. Mary, Whitechapel R
- 17 St. Matthew, Bethnal-green
- 18 St. Paul, Shadwell

All the foregoing parishes, amounting to the number of 136, are comprized within the bills of mortality. To these are usually added ten parishes within the county of Surrey; which makes up the whole number of parishes lying within the bills of mortality, viz. 146.

PARISHES OUT OF THE BILLS OF MORTALITY.

O B S E R V A T I O N S.

[To face p. 560.

Names of the Parishes.	Number of A. R. P.	No. of Houses.	No. of Inhab.	No. of Baptisms.	No. of Burials.	Waste Land, series.	Area, bte.	Grass.	Mark.
1 St. Peter's, in the Tower	—	—	—	11,9	11,2	—	—	—	—
2 Acton (R.)	1900	240	—	40,8	47,5	—	—	—	10
3 Barnet Friars	—	78	275	11,	12,	—	—	—	—
4 Brentford	200	270	—	53,5	48,5	—	25	175	—
5 Bromley, St. Leonard's	450	200	—	31,5	48,9	—	195	195	60
6 Chelsea (R.)	767	1350	—	253,	128,4	—	12	267	160
7 Chiswick (V.)	1200	426	—	110,6	113,5	—	300	200	280
8 Ealing (V.)	3100	700	—	164,25	157,5	—	1220	1560	250
9 Edgware (C.)	1800	706	—	12,75	13,4	—	90	—	—
10 Edmonton (V.)	4891	810	—	130,7	133,25	1231	1660	1970	27
11 Enfield (V.)	12254	920	—	129,5	147,7	1530	4390	2040	—
12 Finchley (R.)	1950	250	—	40,	45,	1010	100	1700	—
13 Fulham (R. & V.)	1080	702	—	125,2	122,7	—	270	270	540
14 Hammersmith	1820	790	—	125,1	133,4	—	740	550	250
15 Greenford, Magna (R.)	2100	69	—	12,4	8,1	65	430	1400	—
16 Greenford, Parva (R.)	700	5	—	7	2,8	—	230	450	—
17 Hadley	580	94	—	25,4	9,5	200	40	310	—
18 Hampstead	2169	686	—	95,5	138,7	273	100	1600	—
19 Hanwell (R.)	1200	107	—	17,	17,4	120	540	540	—
20 Harrow (V.)	13600	400	—	60,5	52,2	1600	5800	6000	—
21 Hayes (R.)	3300	141	707	23,4	21,5	164	2150	840	—
22 Hendon (V.)	8204	240	—	46,4	58,1	—	300	7700	—
23 Heston (V.)	2654	280	1632	59,4	58,9	686	1276	610	—
24 Hornsey (R.)	2200	420	—	35,1	16,	150	50	1800	—
25 Isleworth (V.)	2377	712	4190	131,5	115,6	—	14	—	430
26 Kensington (V.)	1910	1240*	—	195,5	234,9	—	100	360	230
27 Kingbury (C.)	1515	52	—	6,9	12,5	—	93	1391	—
28 Marybone	2500	6200	—	169,32	141,34	—	—	1650	—
29 Stoke Newington (R.)	550	200	—	35,	43,	—	—	500	18
30 Northall (V.)	1911	60	—	10,	9,75	—	630	1270	—
31 Norwood	2360	129	—	20,	22,	25	1354	981	—
32 Paddington	1197	340	—	36,6	244,6	—	—	1000	—
33 Pancras (V.)	2700	4000	—	343	390,	—	50	—	—
34 Stanmore, Magna (R.)	1400	140	—	23,	24,	250	300	850	—
35 Stanmore, Parva, or White-church (C.)	1500	94	—	16,	15,	—	130	1370	—
36 Stratford-le-Bow (R.)	465	330	—	64,4	51,	—	218	—	—
37 Teddington	550	118	—	19,2	26,8	—	500	50	—
38 Tottenham (V.)	4000	470	—	81,4	83,6	—	440	3000	—
39 Twickenham (V.)	1850	611	3355	96,	80,	690	630	490	150
40 West Twyford	280	1	10	2,	3	—	—	280	—
41 Wilton (V.)	3400	130	—	29,8	25,4	—	—	—	—
Total	—	—	—	4417,3	4549,7	—	—	—	—

St. Peter's Advincula, within the Tower, is not a parish church, but a royal chapel, belonging to the garrison of the Tower of London.

The greater part arable; the soil, towards the north, a stiff clay, towards the south, a rich loam.

The land mostly meadow; the proportion of arable very small; the soil a stiff clay.

The soil various; clay, gravel, and loam.

The soil, for the most part, gravelly.

In 1664, from an actual survey, by James Hamilton, it contained 630a. viz. gardens, &c. about the manor house 9a. or. 16p. scite of houses, gardens, &c. 53a. 2r. 7p. park 40a. glebe 23a. 1r. 38p. arable 300a. 2r. 8p. meadow 38a. 3r. 22p. pasture 128a. 1r. 15p. common 37a. or. 7p. and a detached parcel of 137a. of clay in grass; the soil of the rest sand and gravel.—Ten or twelve acres are sown with corn.

Exclusive of parks and paddocks; which, with private gardens, &c. make up the remainder. The soil varies from a light sand and gravel to a rich loam; but, even in the best land, gravel is to be found near the surface.

The soil various, viz. clay, gravel, and loam, or brick earth.

The soil, clay.

The soil, in general, is a good loam; in some parts gravel; in others clay and moor earth.

Contains 6430 acres of land, exclusive of the chase; the soil, except on the marsh, is a good loam.—In 1777 an act passed for dividing Enfield-chase. Including the roads, lodges and encroachments, the chase contained 8349a. 1r. 30p. which was thus allotted, viz. to the King 3218a. 2r. 20p.—To the lodges 313a. or. 3p.—To be enfranchised 6a. 2r. 1p.—To the tithe-owners 519a. or. 32p.—To the manor of Old Ford 36a. 3r. 24p.—To the proprietors of the old park 30a. or. 15p.—To the parish of South Mimms 1026a. or. 3p.—To the parish of Hadley 240a. or. 0p.—To the parish of Edmonton 1231a. 2r. 6p.—To the parish of Enfield 1732a. 2r. 6p.—The allotments to South Mimms, &c. were added to the respective parishes; which leaves 5824a. in the parish of Enfield.—The greater part of the chase allotment belonging to this parish (viz. 1530a.), remains as waste land; on which the inhabitants have right of common.—200a. are cultivated, and, on an average, worth 30s. an acre.—One-half the produce is appropriated to the reduction of the land-tax; the other half to the reduction of the poor-rates.—This part of the allotment is tithe-free.

Contains about 1950 acres of land (exclusive of the common), 150 acres of wood; the soil various, but principally a black loam. The common (two-thirds of which is in this parish, the remainder in Hornsey and Friars Barnet), contains 1010 acres of land.

The corn land is frequently sown with garden vegetables.

Ditto.

1250 acres are inclosed; 580 in common fields; 96 wood-land inclosed: the soil clay.

The soil is, for the most part, clay; in some parts gravel.

The soil, chiefly clay, mixed with gravel.

The soil, very various: loam, clay, bog-earth, gravel, &c.

The soil, clay; the Grand Junction canal forms its western boundary.

The soil, for the most part, clay, in some places sand and brick-earth.

3160 acres of land, exclusive of houses and gardens. The common-field land, included in the above statement, is 1615 acres.—The soil, on the north side, is a strong clay: on the south side loam, on a deep bed of gravel.

About 120 acres of wood-land; the soil, mostly clay, with a mixture of gravel.

About 120 acres of wood; and 686 acres of common, including a considerable part of Hounslow-heath. Soil, in general, a strong loam, which produces particularly fine wheat.

About 120 acres of wood; the soil, for the most part, clay; about Higgate a sandy-loam.

Contained, in 1635, 2377 acres of land; of which 910 were arable; 930 pasture; 43 wood; and 494 (of which 437 was part of Hounslow-heath), waste. The gardens are mostly cropped with raspberries for distillers' use, and sent to town in swing-carts.

The soil, various; sand, gravel, and a rich loam.

About one-half pasture and meadow; 260 more cultivated sometimes for corn, sometimes for garden crops. The soil, various, clay, loam, and brick-earth.—Hot-house fruit declared to be tillicable in 1781.

32 acres wood-land. The soil, chiefly clay.

One-third is occupied by buildings, the rest nearly all grass-land; a few acres in market-gardens. The soil, on the south side, a fine gravel; on the north side clay. Marybone-park, from an actual survey, contains 543a. or. 17p.—About two-thirds of it in Marybone, the rest in Pancras. The baptisms and burials are the average of five years, from 1790 to 1794, inclusive.

About 120 cows kept.—The soil, on the south side, gravelly, on the north side clay.

The soil, a deep clay.

The soil, mostly gravelly: the Grand Junction canal passes through this parish.

84a. 2r. 20p. arable and garden-ground; the remainder meadow and pasture. The soil, in the neighbourhood of the village, principally facilitates; on the east side of a little brook, which runs by Kilbourn and Baywater, the soil is a thin clay upon a dry bed of gravel; on the west side of this brook a deep clay; the springs lying very far beneath the surface.

2700 acres, including the scite of buildings; the proportion of arable land very small, scarcely 50 acres; the soil, various, clay, gravel, and loam.

The soil, principally clay.

The remainder pasture and marsh land. The soil, various, loam, sand, and gravel.

Exclusive of commons. The soil, is, for the most part, light and sandy.

About one-eighth arable, the rest grass; the soil, various, clay, loam, and brick-earth. There are 293 acres of marsh land.

Forty acres wood, and 690 (extending a considerable way upon Hounslow-heath), common.—Famous for fruit-gardens.—Soil, a sandy loam.

The soil, clay.—The new canal about to be made from the Colne, at Uxbridge, to Paddington, will pass through this parish.

The quantity of arable and pasture constantly varying; but the proportion of grass land much the greater. The soil, in the low lands, mostly clay—in the high lands, mostly gravel.

N. B.—The account of the last forty parishes in this list, is extracted from the Rev. Mr. Lysons' "Environ of London."

* Of which only 1150 are occupied.

O[®]
arch
ations

Having dispatched letters to the officiating clergymen of so many parishes as I could procure the names of, requesting them to favour me with accounts of the number of baptisms registered in their several parishes during the last ten years, I was obligingly, and readily answered by every one of those gentlemen; and I am, consequently, enabled to subjoin the following statement of the names of the parishes, and the annual average number of baptisms within those parishes, for the last ten years, ending with 1796.

	<i>No. of Bap.</i>
1 Ashford, a hamlet belonging to the vicarage of Staines, - - - - -	7,4
2 Bedfont, a vicarage, - . - - -	14,9
3 Cowley, a rectory, - - - - -	5,5
4 Cranford, a rectory, - - - - -	7,8
5 Feltham, a vicarage, - - - - -	15,1
6 Hampton, a vicarage, - - - - -	37,7
7 Hanworth, a rectory, - - - - -	14,
8 Harlington, a rectory, - - - - -	13,7
9 Harefield, a curacy, - - - - -	24,4
10 Harmondsworth, a vicarage, - : - - -	22,5
11 Hillingdon and Uxbridge, a vicarage, - - - - -	116,
12 Ickenham, a rectory, - - - - -	8,6
13 Laleham, a vicarage, - - - - -	9,
14 Littleton, a rectory, - - - - -	6,8
15 Riselip, a vicarage, - - - - -	35,4
16 Shepperton, a rectory, - - - - -	22,
17 South Mims, a vicarage, - - - - -	35,1
18 Staines, a vicarage, - - - - -	46,8
19 Stanwell, a vicarage, - - - - -	28,4
20 Sunbury, a vicarage, - - - - -	39,
21 West Drayton, a vicarage, - - - - -	10,4
	520,5
	In

In these 21 country parishes, or places, -	520,5
In the afore-mentioned 41 parishes, or places,	4417,3

The total annual number of baptisms, in these
62 parishes, or places, lying out of the limits
of the bills of mortality, are - - - 4937,8

whereof the five parishes, or places, of Mary-
bone, Pancras, Chelsea, Paddington, and St.
Peter's in the Tower, average - - 2837,7
And the other 57 parishes or places, average, 2600,1

Or total - - 4937,8

NO. XX.

LETTER FROM THE REV. JOHN HOWLETT
TO THE AUTHOR, ON POPULATION.

SIR,

I WAS not at home when your very obliging letter of the 15th arrived here, or I should have endeavoured to have answered it sooner. And now I am set down for that purpose, I will begin by correcting my own errors, with respect to the population of the kingdom, and that of the metropolis in particular.

The former, in my examination of Dr. Price's essay, &c. I made to be between eight and nine millions. This estimate was formed upon principles so extremely unfounded, which I did not then know, but very soon discovered,

covered, as rendered the final result utterly erroneous. From a more minute, and accurate investigation of the subject, about fourteen or fifteen years ago (which I intended to publish, but did not, and I believe never shall), I am nearly confident our population did not then amount to seven millions and a half, and that at present it does not exceed eight millions. It is somewhat extraordinary, that the fallacy which misled me, neither the public nor the keen penetrating eyes of Dr. Price ever saw. The Doctor indeed pointed out a misapprehension which he supposed me to be under; but that was entirely groundless.

With regard to the number of inhabitants within the London bills of mortality, I confess I felt no small degree of confusion, upon finding I had asserted they were between 8 and 900,000; having long been inclined to think that they have never yet amounted to 700,000. I have turned to the passage in which I have given my estimate of 8 or 900,000, and find the reasoning upon which it is founded, too vague and precarious to be safely depended upon.

In my examination of Dr. Price's essay on the population of England and Wales, I have stated the annual deficiency of burials in the metropolis, as given in the bills of mortality, at 11,273; which, added to those then in the bills, 20,668, makes the total of annual burials 31,941*. Dr. Price very justly observes, I have made

* That the deficiency of burials registered in the bills has been considerably increased since the year 1780, is, I believe, notorious; and that this increase is now at least 1000, is, I presume, by no means an extravagant estimate. The burials in the bills for 1795, were 21,179; that is, 511 more than those of 1780; adding these to the thousand, the increased deficiency of burials, together with the allowed deficiency in 1780, and we have 31,511 for the present total deficiency of the bills, which multiply by 20, (the acknowledged proportion of the inhabitants of the capital to its burials being nearly as that number to 1), and there comes out 630,220 as the actual proportion *within* the bills; and by making the proper deductions and additions, that for Middlesex 634,200.

no allowance for the numbers annually brought from the neighbouring country villages to be interred in London, as I ought to have done, and as I actually did with regard to those carried out of the city, and buried in the country, to the amount of 2000. Now, making proper deductions for this, and some other particulars that might be noticed, I think it requisite to reduce the 31,941 stated above as the total actual number of burials annually within the bills of mortality, to about 30,000. Dr. Price has shewn, with great plausibility, that the annual mortality of the city of London is about 1 in 20 of its entire population; multiplying its 30,000 burials then by 20, we have 600,000 for the entire number of inhabitants *within* the bills.

The population of Middlesex may be computed, by ascertaining the proportion between the number of taxed houses and the number of people in an adequate number of places. This method of calculation Dr. Price himself pointed out, which is unexceptionable; and had Mr. Lysons given us the number of taxed houses only in those parishes of which the infinitely greater, but necessary trouble was taken, actually to enumerate the inhabitants, we should have been able to make it for the county of Middlesex with tolerable precision. And even now, we are not totally destitute of data for this purpose. But before I proceed to calculate upon them, it may not be amiss to say a few words upon the nature of the Tax-office returns.

Now these returns are of two leading descriptions: the first contains the number of taxed and taxable houses; the second, the number of cottages excused on account of poverty.

These returns, for the year 1781, for the whole kingdom stand thus:

Number

POPULATION.

565

Number of houses taxed and taxable	-	728,699
Ditto of cottages excused on account of poverty		277,111
Total	-	1,005,810

Were both these kinds of returns perfectly correct, the population might be easily settled; but this is far from being the case. The taxed and taxable houses are returned by the district surveyors upon *oath*, and are therefore tolerably accurate; but as to the number of cottages, no *oath* is required, and seldom, if ever, are any returns made by them for particular parishes, and those for whole districts are mere lumping random conjectures, most astonishingly defective. For illustration of this, take the county of Essex;

The return of taxed and taxable houses for 1781, is 18,422
 Ditto of cottages excused on account of poverty 9,664

Total	-	28,086
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This proportion of cottages, one would at first sight be inclined to think, would be amply sufficient; for it is more than a third part of the whole return. But upon full inquiry, how different turns out the fact. My parish of Dunmow contains above 300 houses, out of which not 120 are returned as taxed and taxable; and in the parishes of Bocking, Braintree, Halstead, Coggeshall, &c. the deficiency is greater still; and throughout the whole county, I have a sufficient number of actual enumerations of the inhabitants of parishes of every description, fully to authorize my concluding, that our population, compared with our taxed and taxable houses, is above the ratio of $13\frac{1}{2}$ to 1. Were the same proportion to take place in Middlesex, multiplying the taxed and taxable houses,

N n 3

75,171,

75,171, as returned for that county for 1781, by 134, we make its number of inhabitants about 1,004,808; if we adopt 76,527, the number sent to you for the year 1796, and use the same multiplier, we raise it to about 1,033,114. But this cannot be admitted, because the proportion of houses excused on account of poverty, is not nearly so great in Middlesex as in Essex, that being a manufacturing county, and its manufacture greatly declining.

I have the number of inhabitants and taxed houses in Uxbridge, and three country parishes in Middlesex; the former amount to 4,487, the latter to 522*; this gives a proportion of persons to taxed houses of scarcely 8 to 1†; which is certainly as much too low for the whole county as the other is too high, and would give us only 612,216 as the total population of Middlesex.

The number of people in the parishes of Mortlake, Putney, and Wandsworth, in Surrey, by Mr. Lysons' enumeration, is 8,614; of the taxed houses which I procured from the parochial duplicates, 755.

In twelve country parishes in the same county, the inhabitants are 3860; taxed houses 416. To these add the four parishes in Middlesex, as just above given—Persons 4,487, taxed houses 522, and the total amount of the nineteen parishes in the two counties, is 16,961 inhabitants and 1,693 taxed houses; which yields a proportion of the former to the latter, of something more than 10 to 1‡. Multiply therefore the Tax-office return sent you, 76,527

* The accounts of these parishes were sent me in the year 1781; and likewise twelve country parishes in Surrey.

† This should be 8 6.10 to 1, which, being applied to Middlesex, would be $76,526 \times 8 \text{ 6.10} = 6,8,133$.—*J. M.*

‡ These observations of Mr. Howlett's can only be applied to the country, part of the county.—*J. M.*

by 10, and there comes out 765,270*, for the total population of Middlesex. This, I am inclined to think, is not very short of the truth. Perhaps you may approach somewhat nearer, if you obtain, as I suppose you easily might, from the parochial surveyors or collectors of the six parishes of Hayes, Heston, Isleworth, Teddington, Twickenham and Twyford, the number of taxed and taxable houses in their several parochial duplicates, each respectively.

Of the several calculations I have hazarded, I think the last by much the best, and nearest the fact. I presume not, however, to place entire confidence in it. Of this, however, I think myself nearly certain, that the population of Middlesex has never yet amounted to 800,000; I keep my mind, however, entirely open to conviction, upon the appearance of adequate evidence.

I am Sir, &c.

JOHN HOWLETT.

Dunmow, April 23, 1797.

* If we combine the three computations, and take the average, we have about 681,316 for the total population of Middlesex; which, for any thing I certainly know to the contrary, may be nearer the truth than any one of them separately. I should be happy to see the matter more clearly investigated.

NO. XXI.

PLAN OF AN EXPERIMENTAL FARM, BY DR.
FRANCIS HOME. IN A LETTER TO SIR
JOHN SINCLAIR, BART.

SIR,

IN a conversation which I lately had with you on the subject of agriculture, the improvement of which you are so zealously endeavouring to promote, I said that an experimental farm would be most conducive to that end. You desired me to give you some general view of it: I am very willing to give the least assistance to your laudable endeavours; but my time is so much occupied at present, that I can trace the outlines only of such a plan.

Agriculture seems to be one of the mixed arts, depending partly on mechanical instruments, and partly on a process of nature depending on chemical principles. Both of these foundations make its improvement the object of experiment, as the mechanical powers are entirely subject to us, and the chemical are as much in our power as in any other chemical process. Accurate experiments alone, therefore, can improve the art, and give the facts stability. Instead of that, we have hitherto relied, in general, on vague opinion, or on more certain observations, but which died with the observer; whose facts ought to have been ascertained, and handed down to posterity.

We do allow, however, that this method of improving husbandry is more difficult in this art than in any other, for many reasons; but chiefly for these two: 1st, experiments in this art are the most tedious of any. In the mechanical

chanical arts, the experiment is soon finished. In the chemical, such as dyeing, brewing, baking, bleaching, &c. they take a longer time; but they seldom exceed a few days, whereas those in agriculture take a year, and most of them many years, before the facts can be certainly established. The medium time of one man's life is scarcely sufficient for bringing a few to a conclusion. Hence the reluctance in private persons to engage in such. But there can be no objection to the activity of a state, who pursues a plan to be pursued through ages to come.

2d, There are a greater variety of circumstances occurring during an agricultural experiment, capable of affecting and altering it, such as a variety of soil, heat, temperature, noxious vapours, &c. more than in any other art; each of which must vary the issue. There is no other art equals the difficulty of agricultural experiment in this way, except clinical experiments. But such, we have lately shewn, are capable of being executed. Perhaps agricultural experiments may be more difficult, as they are exposed through much longer time to the agency of circumstances. This cause, though it renders a more frequent repetition of experiments necessary to the certainty of the result, yet is done away by the succession of different lives.

Such a plan, I have been informed, has been carrying on for many years in Denmark, &c. It is a shame for us, that other countries should take the lead, when corn and cattle is so great an article of our trade. I shall point out a few of the experiments that at present occur to be made.

1st Section, of an experiment. It appears necessary to have a set of standard experiments, to which all the others may be referred, as to their product and value. The fittest that occurs to me at present, is to follow in these
the

the same method that is used in general in the county where the experiments are going on. One or two acres on different soils may be sufficient for this.

DIFFERENT SOILS.

2d Section. Experiments on the effects of different soils, clay, loamy, sandy, &c. on different grains. These may require four or five acres of different grounds.

3d, Effects of different altitudes of these different grounds on the same grain. This will require at least four acres.

4th, On the comparative effects of the plough and spade, by digging, trenching, in different soils. One acre may be sufficient for this.

5th, The effects of drill husbandry on different grains, such as wheat, beans, peas, &c. in different soils, compared with those of broadcast. This will require six acres at least.

ON DIFFERENT MANURES.

6th, Effects of different manures on all the grains in different soils, such as dung, loam, chalk, clay marl, shell marl, compost dunghills, refuse of soap works, pigeons' dung, soot, rags, ashes, burning the soil, shavings of horn, sea salt, kelp, &c. Ten acres may be required for these.

7th, Effects of summer fallow, and of the soil formed into dykes, compared. One acre may do.

SOWING.

8th, On sowing at different times, before or after the common time of sowing, observing the budding of different trees at that time, to fix the best general time. Three acres to this.

SEEDS.

SEEDS.

9th, On sowing the different varieties of the same seed in different soils, that we may ascertain the fittest for particular soils, climates and altitudes. Six acres.

10th, On the effect of different pickles on different seeds, when steeped in them before sowing, such as liquor of a dunghill, pigeons' dung, salt-petre, sea salt, lime water, &c. Two acres.

11th, On the effect that the different rotation of crops have in different soils, as they are practised in different counties or countries. This may require ten acres.

12th, The effect of the preceding experiments on different grasses.

The above is a short specimen of a few of the experiments that may be made; and those used to such a method of discovering truth, will allow that new ones constantly arise out of the preceding. It must happen, that many of these will be inferior in product to the general standard; but at the same time we must observe, that a negative truth is often as useful as a positive one.

To render the conduct of such a plan more completely useful, a distinct list of the experiments, and the mode of conducting them, should be made out a year before execution, and submitted to the approbation, corrections, and additions of the public.

After a certain number are made, they should be published every year, with observations on them, that the world may reap the advantage, and the public perceive the utility of the institution. It is a book of experiments, and not of reasoning alone, that is wanted on agriculture.

How great would be the utility of such a plan to the country! It must be of the greatest use to the farmer or improver, to point out a proper plan for him to follow,
and

and the only method to improve himself. At present, he must follow the common practice he has seen, whether good or bad. Crops are probably much more defective than they might be. Individuals suffer directly, but the country suffers at last, and loses much in this most essential and primary manufacture.

It must be of the greatest utility to a professor of agriculture, who acquires leading facts from such a plan. A professor of agriculture can no more teach that science without an experimental farm, than a botanical professor teach botany without a garden.

To carry such a plan into execution, a government fund will be necessary; but the expence must be very much inferior to the advantage and honour that the country must reap from it. Let us view the different articles of expence.

A farm consisting of at least seventy acres, will be necessary; fifty of which may be occupied in tillage, and twenty in grass, for the maintenance of four horses to manage two ploughs. Little can be depended on the product of the plough for their food, as many of the experiments may be unsuccessful. Such a farm may stand 120l. a year.

Four horses must be bought and kept up to manage two ploughs, as every experiment must be made in exact time. Besides these two ploughs and their harness, there are drill ploughs, harrows of different kinds, different carts, &c. necessary on all farms.

Besides the common instruments, all those should be got that are used with advantage in any country, and all those that have been suggested as useful.

Two ploughmen must be kept, one of which must be capable of measuring accurately the different portions of land

land set aside for the different experiments; of keeping distinct accounts of what is done; noticing the weather, &c. His wages must greatly exceed the common.

Buildings will be necessary, such as houses for the servants, sheds for the instruments, stables, barn, and particularly houses to keep the product of the several experiments separated. There are many other articles of expence, some of which occur in the beginning only; such as the purchase of horses, instruments, buildings. For these 500l. may be requisite, and 300l. for the annual expence. Though this may appear a considerable expence, yet it is but a small sum, compared to the advantage arising from an increase of the great article of the first necessity, and which other countries bestow for the encouragement of arts of less value.

I am, &c. &c. &c.

Edinburgh, 20th Dec. 1793.

NO. XXII.

PLAN OF AN EXPERIMENTAL FARM. BY
ROBERT FRASER, ESQ. IN A LETTER TO
SIR JOHN SINCLAIR, BART.

SIR,

ACCUSTOMED to mathematical investigation, I find my mind naturally inclined to search for principles, in any science to which I have occasion to bend my attention. In all branches of natural philosophy, of which agriculture

ture is one of the most important, principles can only be known by experiments fairly made, and a deduction from these experiments. Looking at the publications on agriculture, there appears a great number of facts; a number of maxims, some good, some bad; but nothing like an attempt to place agriculture in that scientific form which may lead to regular advancement in the knowledge and practice of the art.

The three branches of natural philosophy most immediately connected with this great mistress of human life, chemistry, botany, and natural history, made little progress until within this last half century. They are now advanced to a degree of perfection which is without doubt astonishing in the history of the progress of human knowledge. By what has this acceleration of knowledge been caused? By this single circumstance—of forming a general language to express the different objects of these branches of philosophy, and to convey clear ideas of the discoveries made in each.

Agriculture, in the strict sense of the word, is applied solely to the cultivation of the land, in reference to the various plants that are used as food for man, and for the animals which are made use of for food, pleasure, or convenience. At present, I wish to confine the consideration of the knowledge of this science to this definition—
“The knowledge of cultivating land, so as to produce certain given plants.”

This implies the preparation of the soil previous to the depositing the seeds and plants; the management after such deposition, and the proportion between the expence of such preparation and management, and the produce of the soil consequent thereon.

A manufacturer takes a pound of flax, the produce of the land, and having a given quantity, he can with ease
and

and perfect certainty, calculate the expence of forming this given quantity, from the state in which he takes it from the field, in its various applications, from the fabric of the coarsest linen to the finest lace. He can by that knowledge form his calculations exactly, with regard to the profits of his trade, upon a given capital laid out on such a material.

Is it not possible to go a step further?

Let there be a soil of a given quality. The elevation in the atmosphere, and the climate given, to find the quantity and nature of the manure required, and the mode of preparation to afford the greatest produce of a certain given species of plant. How is this problem to be solved? Certainly by experiment.

On a given quantity of land, I lay on manure which costs 3*l*. From this I have a produce equal to 20*l*. But if I lay on one-third more of manure, I have a produce equal to 30*l*. If I lay on double the quantity of manure, I still have only a produce equal to 30*l*.

How then is the exact ratio to be determined, so as to enable me to proceed with a certainty in cultivating a given soil? This appears to me to be still wanting in the science of agriculture.

In order to approximate to this branch of knowledge, it appears to me that it would be of great use to have a public experimental farm, under the direction of a committee of the Board of Agriculture, where every experiment should be registered, and the result ascertained. Let this farm be from three to five hundred acres, and in the neighbourhood of the metropolis. Let there be a weekly calendar published, of all the operations, the weather, &c. as an example to the rest of the kingdom. The experimental farm might be taken up by subscription, like the Veterinary School; the calendar formed into a newspaper,

paper, and filled up with other agricultural information.

This idea has occurred to me, and I give it to you in its rough form, to consider of it. I shall also digest my thoughts on this subject more at large. The different breeds of sheep and cattle would also be tried, and their comparative excellence ascertained. I submit it to your better understanding; and am,

Your obliged humble servant,

R. FRASER.

London, Sept. 8, 1794.

NO. XXIII.

The following observations, on the yellow colour which is sometimes observable in the fat of mutton and beef, and the method of discovering it while the animal is living, are the substance of a conversation which the author had with a Smithfield salesman on that subject.

THE colour of the fat of a sheep may easily be known by making an incision, of about two inches in length, through the skin and fat of the tail of the living animal, and by spreading the wound with the side of the knife at the time of cutting it, which will shew the natural colour of the fat, whether it be fair or yellow.

Lambs and calves should always be tried in this manner, and such as should prove, on trial, to be of an unpromising colour, should not be kept for breeding. If this method was always pursued, the grazier might be able to warrant his stock to die of a fair colour.

Cattle

Cattle whose fat is yellow, fatten as kindly as those whose fat is of a fair colour, and they are said to be less subject to the rot.

The yellow colour extends through every part of the fat, but it is not, on that account, disliked by the tallow chandler. The flavour of the meat whose fat is of this colour, cannot be distinguished from that whose fat is of the fairest colour, and yet it is sold for three-halfpence or two-pence per pound less, and is, therefore, mostly put off by candle light.

This defect must be hereditary; as no pasture, or particular food, can either produce or remove it.

Sheep which have been tried in the manner here described, and found yellow, have been sent to the Thames marshes, kept there a year, and, when slaughtered, have proved as yellow as gold.

The foregoing observations apply as well to beef as mutton.

NO. XXIV.

EXTRACT OF A LETTER WRITTEN BY THE
AUTHOR TO SIR JOHN SINCLAIR, BART.

Lambeth, 17th May, 1798.

DEAR SIR,

LORD Somerville's address to the Board of Agriculture informs me that the finances thereof are rather low. I, therefore, hereby relinquish every demand which I might

o o

other-

otherwise have on it: happy in having contributed my mite towards promoting the views of so useful an institution.

I observe, with infinite regret, that the plan of continuing the County Reports is likely to be given up; or, at least, that it will not be pursued with that energy which can alone advance the science of agriculture to any great degree of perfection in our time.

If the Board would wait to receive most of the *improved* County Reports, and then employ some person, of competent skill and judgment, to select the most valuable parts, from the *mass* of information which would be contained in them; and to condense and arrange such parts into the form of a complete body of practical agriculture; a great point would be gained.

This work might, while in this *infant* state, be printed and circulated, one section or chapter at a time (in the same manner as the first County Reports were), in order to obtain such additional observations and remarks, as practical and enlightened agriculturists might be disposed to make.

These would, probably, be all circulated and returned to the Board in two or three years: and, from these materials, a complete treatise on the science of agriculture might be composed, printed, and published by the Board, in about five years from the present time.

The work might be comprized in two or three volumes octavo; the price of which need not exceed a guinea.

Such a valuable and cheap work, would be universally read, and the improvement of the country would, consequently, make a gigantic stride towards perfection.

After the completion of this *grand* object, the Board might, very properly, restrict their future publications to a small volume once a year; into which nothing ought to be admitted but such improvements as had taken place subsequent to their former publication.

I am

I am so fully convinced of the eligibility of the foregoing plan, that, rather than see it given up, I would subscribe one hundred pounds towards carrying it into effect. And am, dear Sir, with much esteem and regard,

Your very humble servant,

JOHN MIDDLETON,

Sir John Sinclair, Bart. Whitehall.

To which the Author had the satisfaction of receiving the two following answers, which could not fail of being highly gratifying to him,

Whitehall, 18th May, 1798.

DEAR SIR,

YOUR favour of the 17th current, informing me that you declined accepting of any recompense for the valuable Report you have drawn up, of the Agricultural State of Middlesex, and your liberal and public spirited offer to subscribe one hundred pounds for completing the County Reports, has given me much pleasure.

I wish, most sincerely, that the proprietors and farmers of this country felt the same zeal that you do on this occasion; and united an ardent anxiety for acquiring a knowledge of the principles of the art of agriculture, to that practical skill and experience which, in so eminent a degree, you possess.

I remain, with much esteem,

Your faithful and obedient servant,

JOHN SINCLAIR.

John Middleton, Esq. Lambeth.

*Board of Agriculture, 32, Sackville-street,
28th May, 1798.*

SIR,

SIR John Sinclair having laid before the Board of Agriculture a letter from you, addressed to him, informing him that you gave up any idea of remuneration, with many very handsome expressions of your good will towards the promotion of the national agriculture; and this letter being read to the Board at its last meeting, I am requested to inform you, that we have a due sense of so liberal a conduct. There is no intention in the Board, of entirely giving up any plan of operation that has been begun. We only wish so far to suspend them, as to have time coolly to consider, not only the best mode of proceeding in future, but also what our funds will permit us to execute.

I remain, Sir,

Your obedient servant,

SOMERVILLE,

PRESIDENT.

Mr. Middleton, Lambeth.

I N D E X.

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